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TABLE OF CONTENTS

Surgical Reconstruction Following Serious Burns. Vinton E. Siler, Cincinnati, Ohio 187

A Method for Fusion of the Wrist. Paul C. Colonna, Philadelphia, Pennsylvania 195

The Etiology and Surgical Treatment of Lung Abscess: Importance of Lobectomy. O. C. Brantigan and E. A. Looper, Baltimore, Maryland 199

Discussed by Millard F. Arbuckle, St. Louis, Missouri.

Vitamin C in Peripheral Vascular Failure: Results of Recent Studies. Ellen McDevitt, A. Wilbur Duryee and Bertrand E. Lowenstein, New York, New York 208

The Therapeutic Value of a Thermolabile Factor Found in Fats, Particularly the Lecithins, in Dermatoses. Francis M. Pottenger, Jr., Monrovia, California 211

Experiences with the Photoroentgen Method in Chest Surveys: Analysis of 100,000 Examinations. Robert E. Lee, Washington, D. C., Archie Fine, Cincinnati, Ohio, and Theodore B. Steinhausen, Rochester, New York 217

Discussed by Robt. J. Reeves, Durham, N. C.

Syphilis Control in War Time. J. R. Heller, Jr., Washington, D. C. 219

Discussed by Paul A. O'Leary, Rochester, Minnesota.

Retinal Detachment Seen in an Army General Hospital. Everett R. Veirs, Atlanta, Georgia 224

The Evaluation of Excretory Urography in General Practice. Bernard H. Nichols, Cleveland, Ohio 226

Neurological Emergencies. Charles D. Aring, Cincinnati, Ohio 230

The Heart in Pregnancy: Prognostic Aspects. William A. Sodeman and Edward L. King, New Orleans, Louisiana 235

Acute Dermatitis of the Hands Due to Handling and Dressing Wild Rabbits. E. R. Tyler, Durham, North Carolina 240

Education of the House Staff Now and After the War. Frank R. Bradley, St. Louis, Missouri 240

EDITORIALS 244

Care of Burns
Thyroid Structure and Function
Ovulation and Temperature
Twenty-Five Years Ago

BOOK REVIEWS 246

SOUTHERN MEDICAL NEWS 248

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Former Surgeon in Chief of Washington Eye and Ear Hospital, Washington, D. C.

In collaboration with

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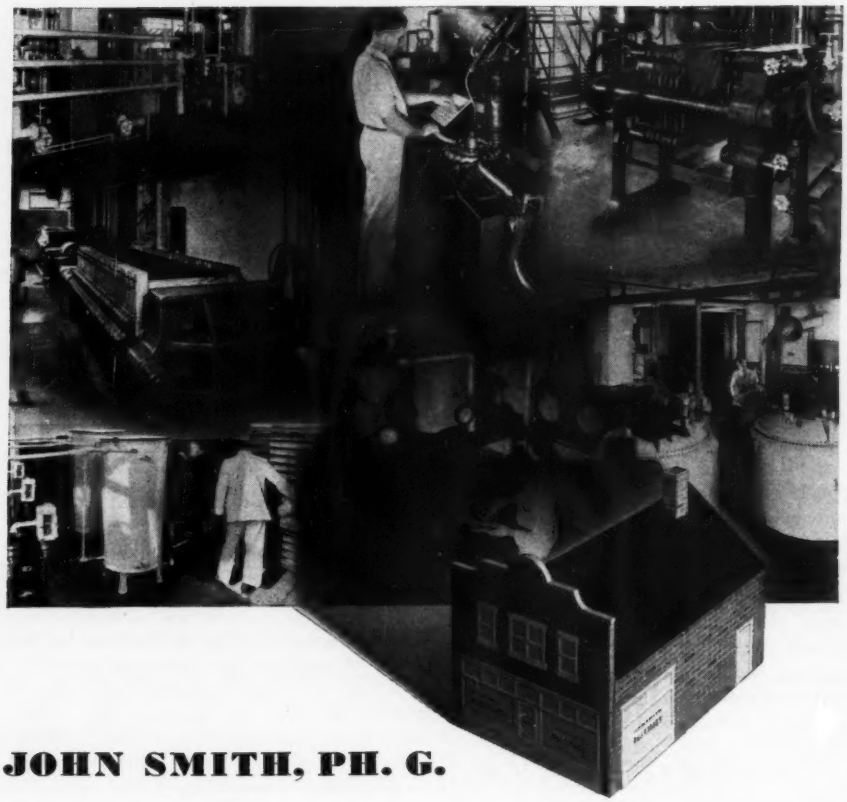

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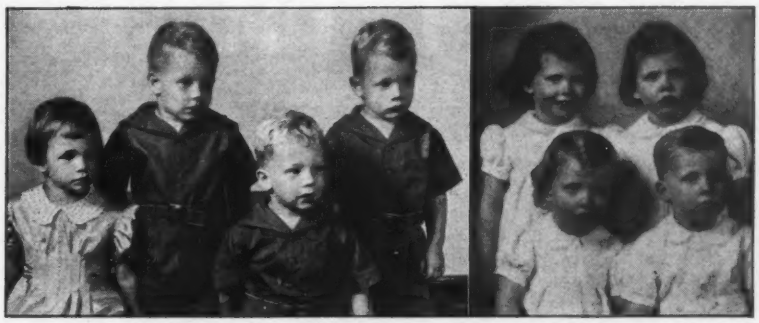

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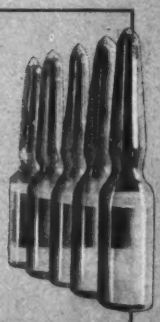

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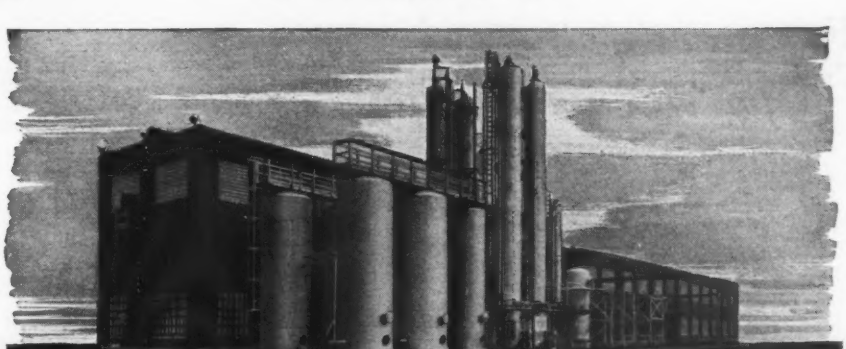

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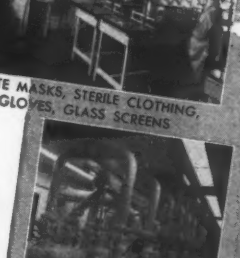

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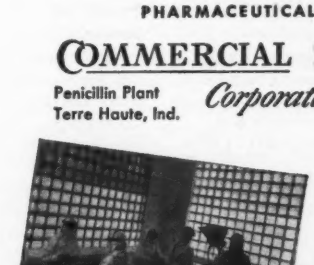

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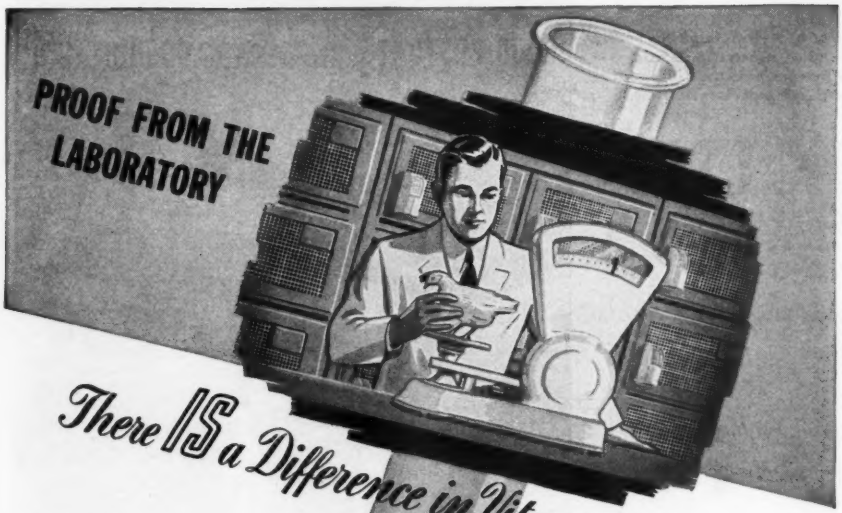

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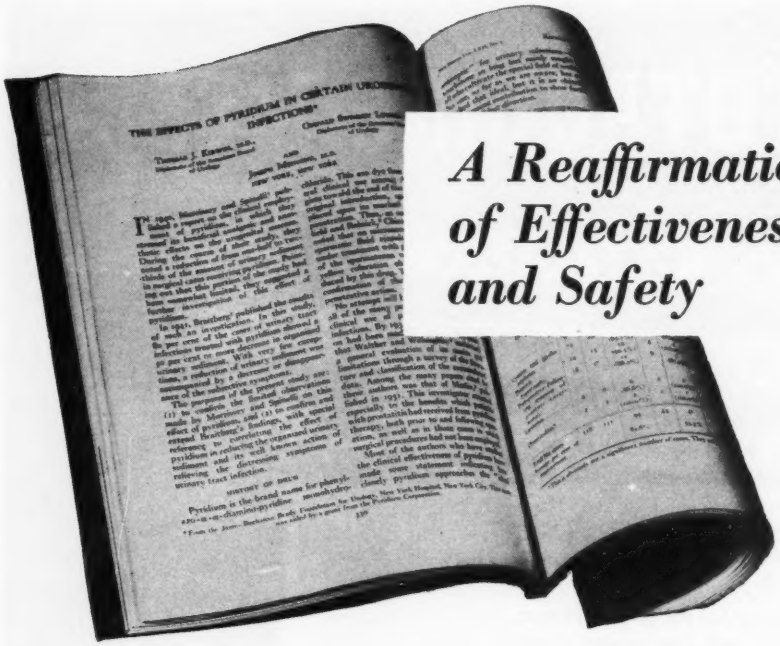
Physicians accustomed to the pure white appearance of Quinine powder need not be disturbed by the color of Totaquine, as this has no bearing on the therapeutic properties of the drug. Totaquine powder may vary somewhat in color, but is generally pale brown. Totaquine is odorless and has a bitter taste. It is practically insoluble in water, but is readily soluble in dilute mineral acids. It is neither hygroscopic nor efflorescent. The incompatibilities of Totaquine are similar to those of Quinine Sulfate, but Totaquine is not incompatible with alkali, calcium or magnesium carbonates, or their oxides, or hydroxides.

• • •

Totaquine Merck, U.S.P. XII, is available in powder form for prescription purposes. Totaquine is also available in tablet and other pharmaceutical forms, ready for immediate dispensing, under the labels of leading pharmaceutical manufacturers.

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**



A Reaffirmation of Effectiveness and Safety

THE recent careful study conducted by Kirwin, Lowsley, and Menning, of the James Buchanan Brady Foundation for Urology, New York Hospital, and published in the December 1943 issue of *The American Journal of Surgery*, reaffirms the many previously published reports emphasizing the clinical effectiveness and complete safety of Pyridium in the symptomatic treatment of common urogenital infections.

In this study of 118 cases of common urogenital infections, routine Pyridium therapy administered for a period of two weeks produced relief of the distressing symptoms in the following percentage of cases: Pain on urination was alleviated or abolished in 95.3 per cent of the cases; burning on urination was relieved in 93.6 per cent of the cases; frequency was greatly reduced or abolished in 85 per cent of the cases; and nocturia was reduced or eliminated in 83.7 per cent of the cases.

The prompt and effective symptomatic relief provided by Pyridium is extremely gratifying to the patient suffering with distressing urinary symptoms. Gratifying also is the confidence in the physician and his therapy which is so evident among patients who are treated with Pyridium.

More than a decade of service in urogenital infections

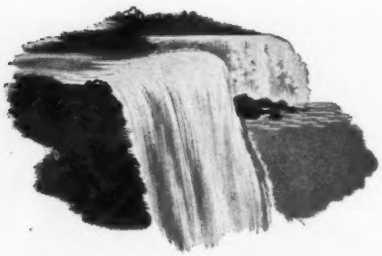
PYRIDIUM

(Phenylazo-alpha-alpha-diamino-pyridine mono-hydrochloride)

Pyridium is the United States Registered Trade-Mark of the Product Manufactured by the Pyridium Corporation

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

Those Early Lingual Signs
Acute hyperemia followed by hypertrophy of the fungiform papillae—one of the early lingual signs.
PRIVATE
The tongue is frequently a valuable diagnostic aid in vitamin B complex deficiencies. Where such evidence is seen, treatment with the *whole* B complex is indicated—adequate amounts of thiamine, riboflavin and nicotinic acid, and all the lesser known members of B complex.
White's Multi-Beta Capsules
(Vitamin B Complex)
provide—in each capsule—the basic adult daily requirements of all clinically proved B complex factors,* plus 0.25 mg. each of pyridoxine hydrochloride and calcium pantothenate, and *all* B complex factors, known or unknown, derived from 167 mg. of high potency brewers' yeast concentrate.
Supplied in bottles of 30, 100, 500 and 5000. Priced for unusual economy to patient. Ethically promoted. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, N.J.
*Established by the Food and Drug Administration and recommended by Food and Nutrition Board of National Research Council.
White's PRESCRIPTION vitamins



Smooth, Bland Bulk—With Added Virtues

To the recognized advantages of smooth bulk as a constipation corrective, Mucilose adds the following basic virtues—

This economical, easy-to-take, natural peristaltic stimulant is non-allergenic, non-caloric, non-digestible and non-absorptive of fat-soluble vitamins.

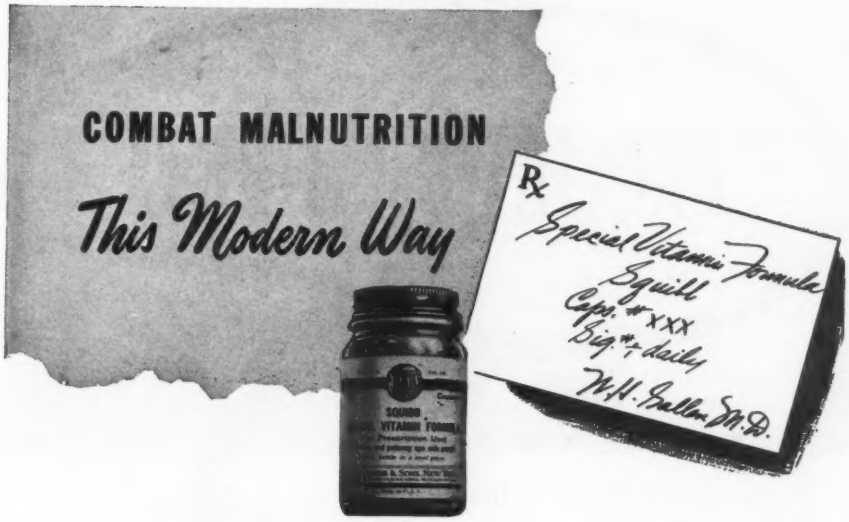
Mucilose

This highly purified hemicellulose is available in 4-oz. and 16-oz. bottles as Mucilose Flakes and Mucilose Granules.
Trade Mark MUCILOSE *Reg. U. S. Pat. Off.*

Frederick Stearns & Company

DETROIT, MICHIGAN

NEW YORK KANSAS CITY SAN FRANCISCO WINDSOR, ONTARIO SYDNEY, AUSTRALIA AUCKLAND, NEW ZEALAND



SINCE reliance on diet alone is uncertain and slow, polyvitamin therapy is often indicated.

Such therapy should be based on multiples of the new nutritional yardstick—the daily Recommended Dietary Allowances of the Food and Nutrition Board of the National Research Council. This formula represents the combined judgment of "more than 50 persons qualified to express an opinion on the subject."[1]

One capsule daily of Squibb Special Vitamin Formula supplies the Recommended Dietary Allowances for a 70 Kg. man.

Each capsule contains:

5000 Units Vitamin A
800 Units Vitamin D
2 Mg. Thiamine Hydrochloride
3 Mg. Riboflavin
20 Mg. Niacinamide
75 Mg. Ascorbic Acid

Squibb Special Vitamin Formula Capsules are supplied to druggists in bulk. Generally dispensed on prescription for 5 or 6 cents per capsule, in any quantity designated.

Combat malnutrition this modern way. Use Squibb Special Vitamin Formula Capsules.

- ***For Therapy***
- ***Diet Supplement in Health***
- ***Diet Supplement in Convalescence***

[1] National Research Council, Reprint and Circular Series No. 115, Jan. 1943.

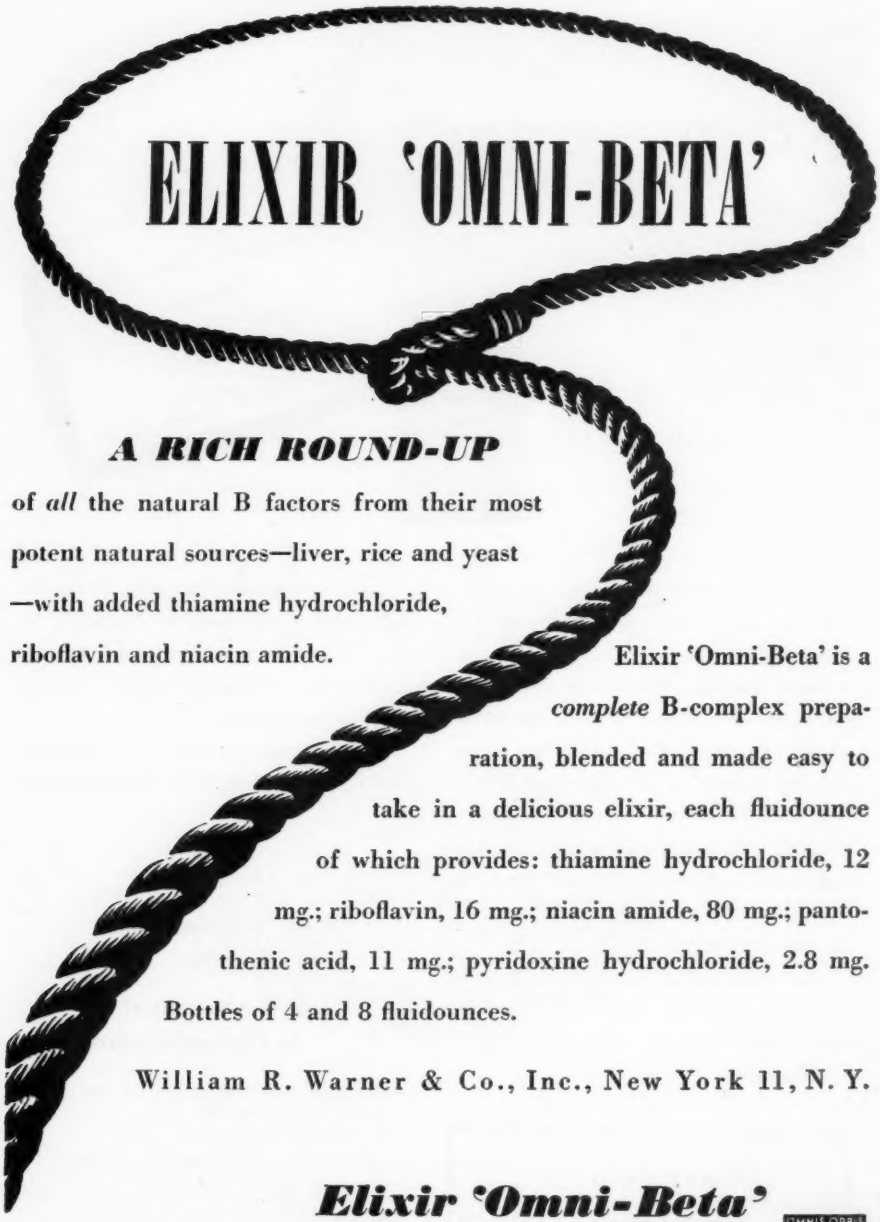
Literature available on request.

E·R·SQUIBB & SONS

Manufacturing Chemists to the Medical Profession Since 1858

★ BUY MORE WAR BONDS ★

ELIXIR 'OMNI-BETA'



A RICH ROUND-UP

of *all* the natural B factors from their most potent natural sources—liver, rice and yeast —with added thiamine hydrochloride, riboflavin and niacin amide.

Elixir 'Omni-Beta' is a *complete* B-complex preparation, blended and made easy to take in a delicious elixir, each fluidounce of which provides: thiamine hydrochloride, 12 mg.; riboflavin, 16 mg.; niacin amide, 80 mg.; pantothenic acid, 11 mg.; pyridoxine hydrochloride, 2.8 mg. Bottles of 4 and 8 fluidounces.

William R. Warner & Co., Inc., New York 11, N. Y.

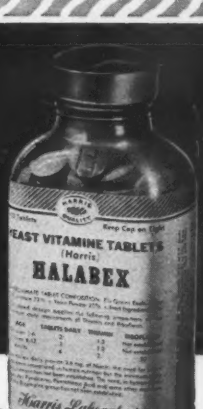
Elixir 'Omni-Beta'
Reg. U. S. Pat Off

VITAMIN B COMPLEX

OMNIS ORBIS
WARNER
ESTABLISHED 1856

HARRIS VITAMINS ARE NEVER PROMOTED TO THE PUBLIC

There is No True B-Complex



UNLESS

It's from a Natural Source

It is impossible to make a combination of synthetics that contains *all* factors of the B-complex. The only way to assure the presence of both known and unknown factors is use of source material that contains the entire complex.

A recent authority* states that the physician regards individual vitamins as having special functions but knows that they occur together in nature and that if the diet is deficient in one it is likely to be deficient in others.

HALABEX—YEAST VITAMINE TABLETS (Harris)—have been successfully used by physicians since 1919. They contain *all factors* of the water-soluble B-complex as found in brewers' yeast, the source material. No synthetics are added. High concentration makes massive oral doses easy.

*Tom D. Spies: Texas State Jl. of Med.: Nov. 1942

HARRIS VITAMIN PREPARATIONS NOW EMBRACE:

Halabex • Halapan • Haladee
Brewers' Yeast Powder (Harris)
Nicotinic Acid • Vitamin C
Vitamin B_1 • Vitamin B_2

HARRIS QUALITY

Harris Laboratories
(Division of Bristol-Myers Company)
Tuckahoe, N. Y.

PRODUCERS OF VITAMINS FOR MEDICAL USE SINCE 1919

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Tuckahoe, N. Y.

I would like a trial package of Halabex —Yeast Vitamine Tablets (Harris) and information on new HARRIS Vitamin Preparations.

Name_____

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Smoothage
NET WEIGHT ONE POUND
Metamucil
SEARLE
A highly refined and concentrated vegetable mucilloid prepared from the mucilaginous portion of the seed of the psyllium group (Plantago Ovata-Forsk), and held in dispersion with an equal amount of a specially prepared dextrose.
Demulcent in action, Metamucil furnishes to the intestinal tract a lubricant effect and provides a bland, non-irritating, easily compressed bulk which encourages normal elimination by promoting physiologic peristalsis.
TO BE TAKEN IN ACCORDANCE WITH PHYSICIAN'S INSTRUCTIONS
G.D. SEARLE & CO.
PHARMACEUTICALS SINCE 1888
Scibetta

Modern Treatment of Constipation

"Smoothage," as provided in Metamucil, brings a modern concept to the treatment of constipation by supplying a bland, nonirritating method of re-establishing normal bowel function.

Metamucil is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

A highly purified, nonirritating extract of a seed of the psyllium group, Plantago ovata (50%), combined with anhydrous dextrose (50%), Metamucil mixes readily with liquids, is palatable, easy to take.

Supplied in 1-lb., 8-oz. and 4-oz. containers.

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ETHICAL PHARMACEUTICALS SINCE 1888

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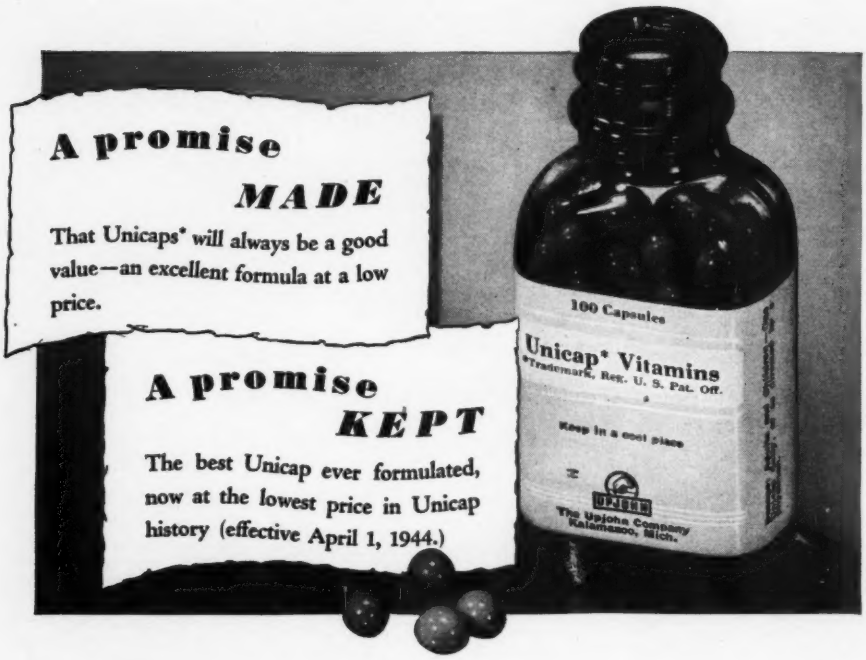
SEARLE

RESEARCH IN THE SERVICE OF MEDICINE


A promise
MADE
That Unicaps* will always be a good value—an excellent formula at a low price.
A promise
KEPT
The best Unicap ever formulated, now at the lowest price in Unicap history (effective April 1, 1944.)
100 Capsules
Unicap* Vitamins
*Trademark, Reg. U. S. Pat. Off.
Keep in a cool place
The Upjohn Company
Kalamazoo, Mich.

Price Reduction

★ A new price reduction of approximately 25% enables your patients to procure potent multivitamin supplementation for *less than 3¢ a day* with Unicap Vitamins.

A Unicap a day is now within reach of more Americans than ever before.

A SINGLE UNICAP CONTAINS:

Vitamin A	*5,000 U. S. P. units*
Vitamin D	*500 U. S. P. units*
Ascorbic Acid (Vitamin C)	*37.5 mg.*
Thiamine Hydrochloride (Vitamin B_1)	*1.5 mg.*
Riboflavin (Vitamin B_2, G)	*2.0 mg.*
Pyridoxine Hydrochloride (Vitamin B_6)	*0.1 mg.*
Calcium Pantothenate	*1.0 mg.*
Nicotinic Acid Amide (Nicotinamide)	*20.0 mg.*

Available in bottles of 24 and 100

*Trademark Reg. U. S. Pat. Off.

Upjohn
KALAMAZOO, MICHIGAN

BUY MORE WAR BONDS ★ ★ ★ ★ THE VITAL ELEMENT OF VICTORY

RAPID HEALING is particularly good news these crowded days to doctor as well as patient.

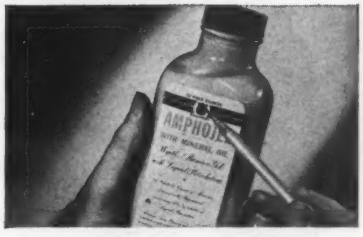
After ten days of Amphojel treatment (with, of course, an appropriate regime of diet and rest), x-ray re-examination often reveals complete disappearance of the peptic ulcer niche.*

In addition to promoting rapid healing of the ulcer, Amphojel offers:

Prompt relief from pain . . . Fewer recurrences . . . Superior weight gain during treatment . . . No alkalosis.

Available in 12 fl. oz. bottles. John Wyeth & Brother, Division WYETH Incorporated, Philadelphia.

*WOLDMAN, E. E., and POLAN, C. G.: The Value of Colloidal Aluminum Hydroxide in the Treatment of Peptic Ulcer; A Review of 407 Consecutive Cases, Am. J. M. Sc. *198:* 155-164 (Aug.) 1939.



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ALUMINA GEL

One of the 21 chemical, biological, and bacteriological inspections constantly

Safeguarding Baxter Solutions

These are the Baxter Vacoliters which *keep* Baxter Solutions safe from laboratory to infusion.

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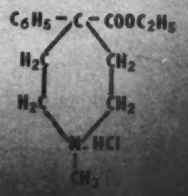
NEW ANALGESIC · SPASMOLYTIC · SEDATIVE

For Oral and Intramuscular Administration

Welcome news to a large number of physicians:

Demerol hydrochloride is now available

ethyl 1-methyl-4-phenyl-piperidine-4-carboxylate hydrochloride



THE analgesic effect appears to be between that of morphine and codeine, and it persists for from three to six hours.

Demerol has many indications in medicine, surgery and obstetrics.

Before prescribing, physicians should read carefully the booklet on Demerol hydrochloride (sent free on request). Please mark prescriptions: "Do not refill."

Supplied for oral use, tablets of 50 mg.; for injection, vials of 30 cc. (50 mg. in each 1 cc.) and ampuls of 2 cc. (100 mg.).

Demerol

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HYDROCHLORIDE

Brand of MEPERIDINE HYDROCHLORIDE

WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the physician

NEW YORK 13, N. Y. WINDSOR, ONT.

BEEF LIVER Concentrated from ⅓ ounce
IRON As much as in one-third lb. of molasses
THIAMINE As much as in 17½ oz. of white bread
RIBOFLAVIN As much as in 4½ yolks of eggs
NICOTINIC ACID As much as in 1 quart of milk

All of these protective elements, these dietary riches, are present in one small caplet of...

LIRON-B

Of course Liron-B Caplets are effective in secondary anemia and malnutrition—how convenient to give, too! Supplied in bottles of 100, 500, and 1000.

BREON

George A. Breon & Company

NEW YORK KANSAS CITY, MO. ATLANTA
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HOW TO GET B COMPLEX ON THE RIGHT SIDE OF PAPILLA VALLATA

The pleasing flavor of Elixir Ribranex quickly gets on the right side of the taste buds of your most finicky patient.

Elixir Ribranex tastes delightful, appetizing—is easy to take.

The source of vitamin B complex in Elixir Ribranex is rice bran concentrate—one of the richest *natural* food sources of the entire B complex.

Elixir Ribranex contains, in biologic balance, thiamine hydrochloride, riboflavin, niacin amide.

In addition, such factors as biotin, choline, inositol, folic acid, pantothenic acid are included.

Elixir Ribranex is available in bottles of 8 fl. oz. and 32 fl. oz.

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IN THE treatment of iron deficiency anemias, numerous clinical and biochemical studies have established that utilization of iron is most satisfactory when copper is present as catalyst.

ARL-CU-FER* HEMATINIC IN IRON DEFICIENCY ANEMIA

ARL-CU-FER combines iron (in the form of pyrophosphate) and copper in the ratio of 20:1.

PRO-CU-FER* HEMATINIC IN IRON DEFICIENCY ANEMIA

PRO-CU-FER retains this same optimal iron copper ratio but with the iron chemically combined with protein.

Both preparations are supplied in bottles containing 60 tablets. Dosage recommended for adults and children: Four tablets daily, immediately after meals.

ARL-CU-FER and PRO-CU-FER tablets are pleasant-tasting and non-staining. They may be chewed, swallowed whole, or allowed to dissolve on the tongue. These preparations are manufactured under license from The Wisconsin Alumni Research Foundation—Hart patent No. 1,877,237.

THE ARLINGTON CHEMICAL COMPANY
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*The names Arl-Cu-Fer and Pro-Cu-Fer are the trademarks of The Arlington Chemical Company.

Insulin action *timed* to the needs of the day

'WELLCOME' GLOBIN INSULIN WITH ZINC

As the diabetic goes through the day, his insulin requirements vary. 'Wellcome' Globin Insulin with Zinc provides an action timed to meet these changing needs. An injection in the morning is followed by rapid onset of action which is sustained for continued blood sugar control as the day wears on. Finally by night insulin action begins to wane, minimizing the occurrence of nocturnal reactions.

Many moderately severe and severe cases of diabetes may be controlled with only a single, daily injection of 'Wellcome' Globin Insulin with Zinc. This new long acting insulin is a clear solution of uniform potency. In its freedom from allergenic skin reaction, it is comparable to regular insulin. This advance in diabetic control was developed in the Wellcome Research Laboratories, Tuckahoe, New York. U. S. Pat. 2,161,198.

Vials of 10 cc. 80 units in 1 cc.

ACCEPTED AMERICAN MEDICAL ASSN

Literature on request

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BURROUGHS WELLCOME & CO. (U.S.A.) INC. 9-11 E. 41 St., New York 17, N. Y.

"First he liked his Bewon, Doctor—and now he likes everything!"

● Wyeth's Bewon Elixir is an unusually delicious vitamin B_1 preparation to spur lackadaisical appetites.
Its stimulating sherry flavor easily wheedles needed supplementary vitamin B_1 into your patient.
And Bewon's ready compatibility with most medicaments makes it a happy vehicle for many of your prescriptions.
Bewon contains 500 International Units of Vitamin B_1 in each fluid ounce. In pint and gallon bottles. A pharmaceutical of John Wyeth & Brother, Division WYETH Incorporated, Philadelphia.

Wyeth **BEWON ELIXIR**

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The case for "PREMARIN" in the treatment of menopausal symptoms . . . . . .

● "Premarin" is highly potent; even severe and well-established cases usually show a satisfactory response to treatment.

● Although highly potent, "Premarin" is exceptionally well tolerated; unpleasant side effects are seldom noted.

● "Premarin" is a natural estrogen . . . conjugated estrogens (equine).

● "Premarin" therapy conserves the physician's time; office consultations are kept at minimum.

● When an oral estrogen is employed, such as "Premarin," a gradual physiological adjustment can be effected. By a controlled "tapering-off" process the patient can be accustomed to decreasing estrogen production.

● "Premarin" is accepted by the A.M.A. Council on Pharmacy and Chemistry.

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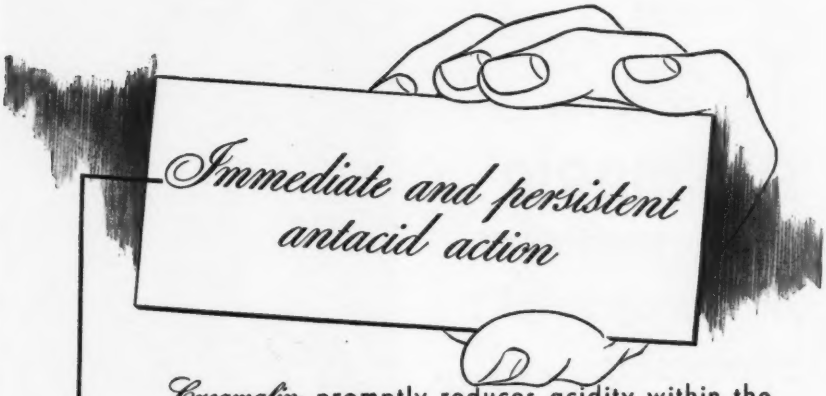
TABLETS
CONJUGATED ESTROGENS
(equine)
AYERST, McKENNA & HARRISON LIMITED . . . ROUSES POINT, N. Y. . . . MONTREAL, CANADA
Pioneers of Oral Estrogens



Immediate and persistent antacid action

Creamalin promptly reduces acidity within the stomach. The antacid effect is persistent. There is no local compensatory reaction, such as commonly occurs with alkalies, and hence no belated oversecretion of hydrochloric acid. Moreover, there is no risk of producing alkalosis.

Creamalin promptly relieves pain and heartburn associated with gastric hyperacidity.

Creamalin often induces healing of peptic ulcer when employed with an ulcer regimen.

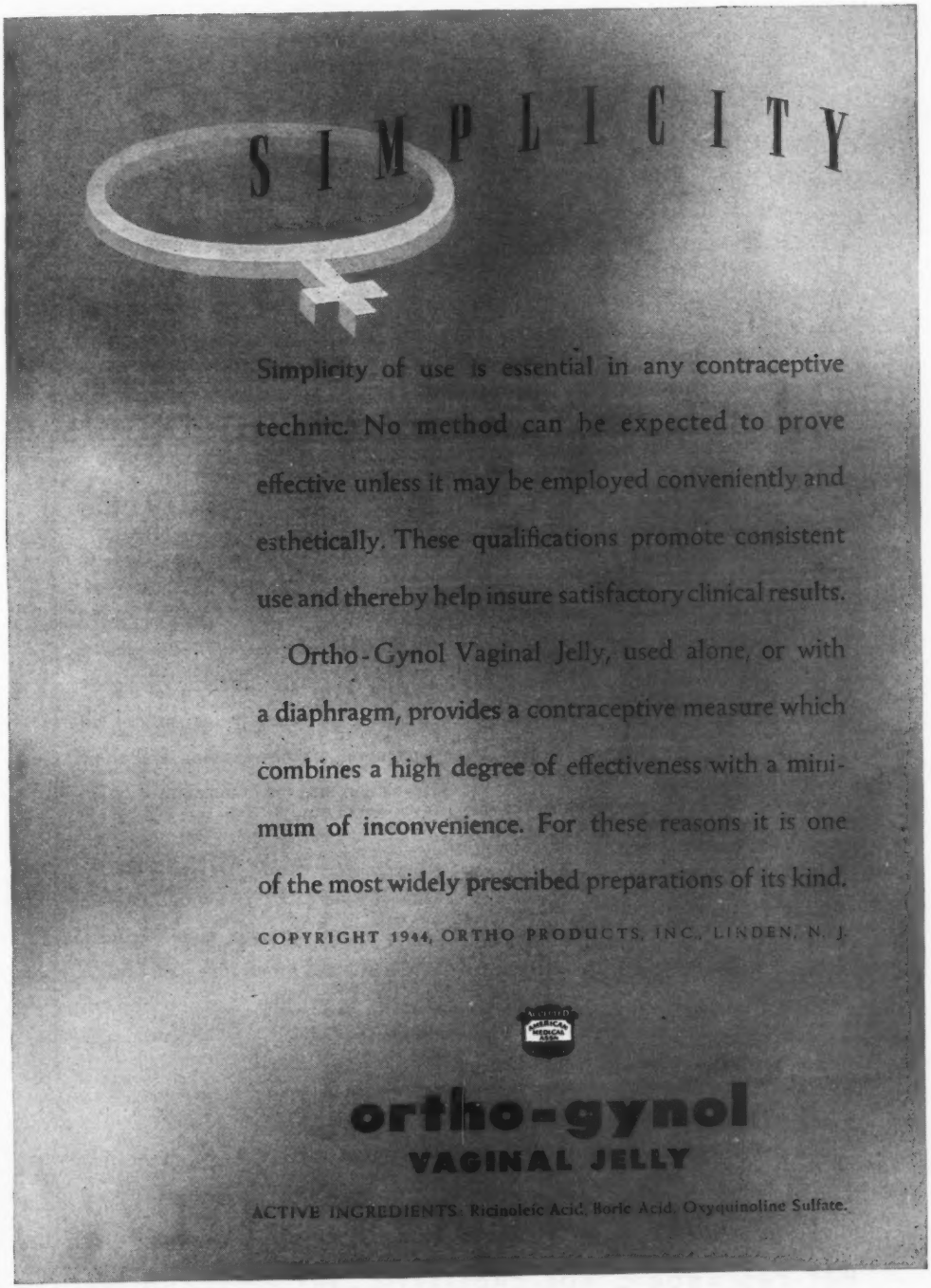
agreeable to taste
convenient to carry and to take
efficient in action

CREAMALIN

Reg. U.S. Pat. Off.
Brand of ALUMINUM HYDROXIDE GEL

TABLETS

WINTHROP CHEMICAL COMPANY, INC.
Pharmaceuticals of merit for the physician
NEW YORK 13, N. Y. WINDSOR, ONT.


SIMPLICITY
Simplicity of use is essential in any contraceptive technic. No method can be expected to prove effective unless it may be employed conveniently and esthetically. These qualifications promote consistent use and thereby help insure satisfactory clinical results.
Ortho-Gynol Vaginal Jelly, used alone, or with a diaphragm, provides a contraceptive measure which combines a high degree of effectiveness with a minimum of inconvenience. For these reasons it is one of the most widely prescribed preparations of its kind.
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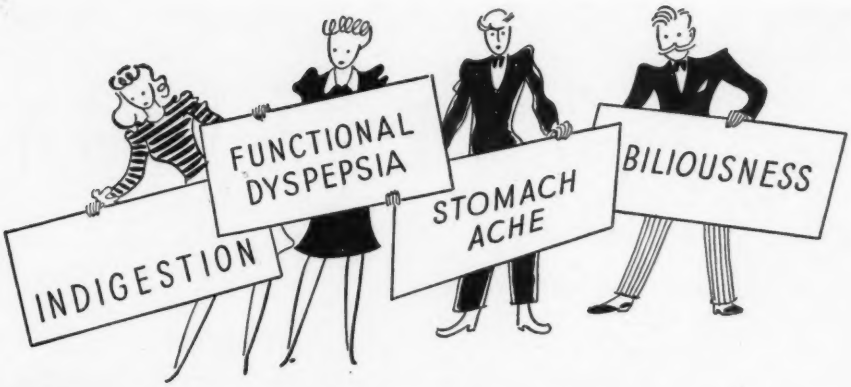
VAGINAL JELLY
ACTIVE INGREDIENTS: Ricinoleic Acid, Boric Acid, Oxyquinoline Sulfate.



"Don't rely too much on labels, For too often they are fables"

—Spurgeon, C. H.

Vague symptoms, particularly in the early stages of diseases of the extrahepatic biliary tract, frequently mask the true condition, and delay much needed therapy.

Free drainage through the biliary channels is the primary objective in such conditions. This may be accomplished most efficiently with Cholan DH (pure dehydrocholic acid—Maltbie), not alone through evacuation of the gallbladder contents—but particularly by a marked increase (up to 200%) in the flow of bile of *especially low viscosity.* The use of Cholan DH may frequently forestall the necessity for surgical intervention, by discouraging gall stone formation and the entrenchment of infection.

Contraindications: Occlusive obstruction of biliary tract. Use with caution in acute yellow atrophy, acute hepatitis, eclampsia and progressive jaundice.

Supplied: in bottles of 100, 500 and 1,000 tablets of 3¾ gr. each; also in ampul form, as Cholan DH Sodium (Solution Sodium Dehydrocholate, in 20% concentration), in either 3 cc. or 10 cc. ampuls, 6 to a box.

THE MALTBIE CHEMICAL COMPANY • NEWARK, N. J.

CHOLAN DH

NOT CHOLAGOGIC, NOR CHOLERETIC—BUT *HYDROCHOLERETIC*

New experimental indications for MALE SEX HORMONE THERAPY...

NEO-HOMBREOL

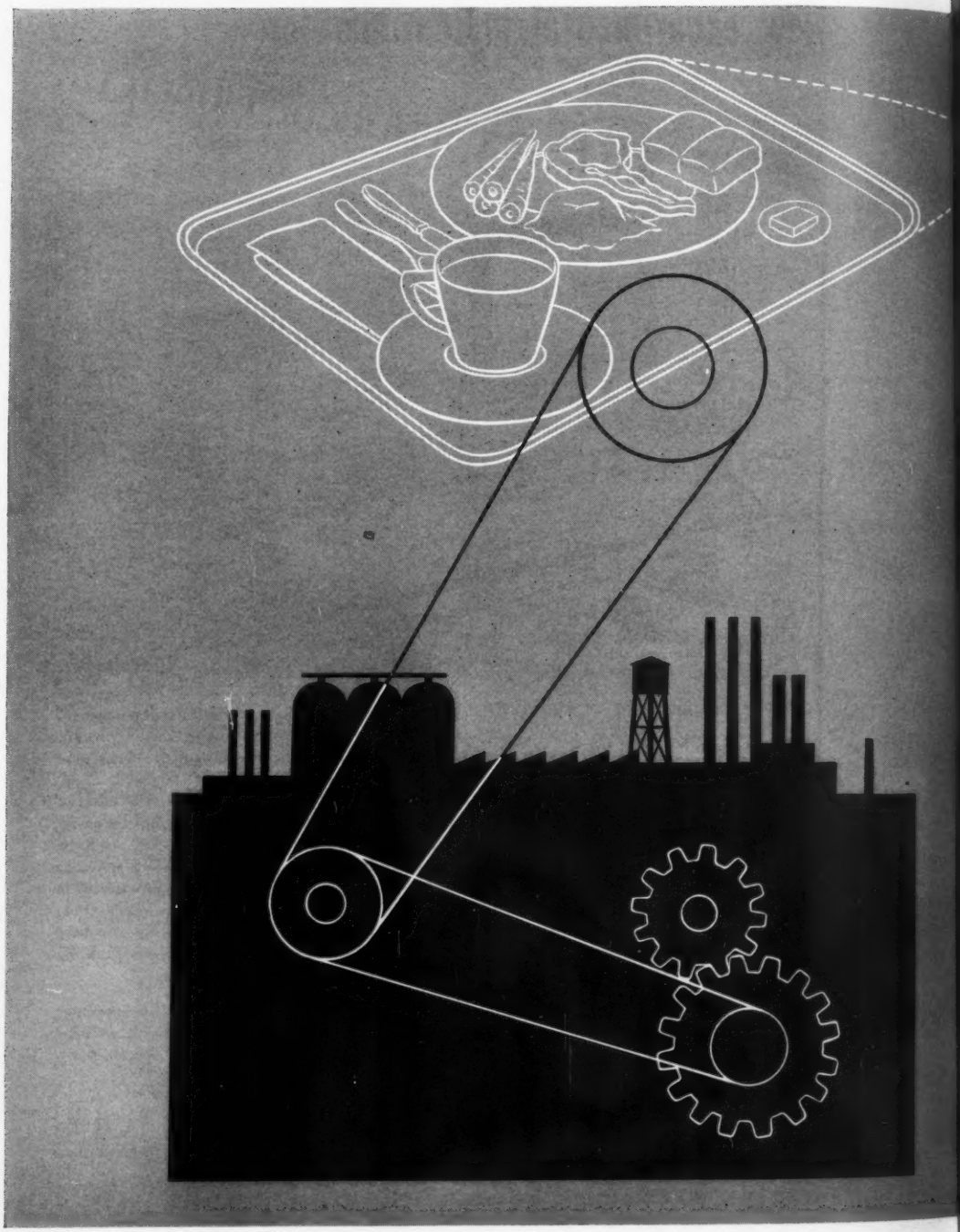
Roche-Orqanon

Recent clinical studies have highlighted the widening scope of androgen therapy. In a majority of patients with *angina pectoris*, testosterone propionate produces "definite therapeutic effects" and may prove "a very valuable adjunct in therapy" (Sigler, L. H., & Tulgan, J., *New York State J. Med.*, 1943, *43*:1424). The effect of androgen therapy in *retarded growth of adolescents* has been "far better than that achieved with other therapy" (Aub, J. C., & Kety, S. E., *New England J. Med.*, 1943, *228*:338). Male sex hormone therapy has also brought about "prompt relief or improvement" in *enuresis* (Schlutz, F. W., & Anderson, C. E., *J. Clin. Endocrinol.*, 1943, *3*:405). In *frigidity*, particularly in those females who have known libido but lost it, "androgens are specific" (Greenblatt, R. B., *J. Clin. Endocrinol.*, 1942, *2*:665).

Roche-Organon Androgen Preparations—Neo-Hombreol (testosterone propionate) ampuls, 5, 10, and 25 mg; *Neo-Hombreol* (*M*) (methyl testosterone) oral tablets, 10 mg; *Neo-Hombreol* (*M*) *Dosules*, 4 mg. Write for literature.

ROCHE-ORGANON, INC.

NUTLEY 10, N. J. • In Canada: Roche-Organon (Canada) Ltd., Montreal



B DEFICIENCIES' TOLL OF MANPOWER

Investigations in industrial plants reveal that malnutrition seriously hinders production.

That Vitamin B reinforcement is one of the outstanding needs in the present-day setup is attested to by various authorities: "When men are doing hard physical labor, even for a few days, there is an imperative need for an adequate daily intake of the vitamin B complex if physical fitness is to be maintained."†

Emphasized also by investigators is the need for the ***Whole*** B Complex: "Deficiencies of the B complex usually occur together . . ."††

BEZON* is ***Whole Natural*** Vitamin B Complex—concentrated to high potency from natural sources—no synthetic factors are added. Only ***Whole Natural*** vitamin B complex contains *all 22* B vitamins.

BEZON is the only ***Whole Natural*** Vitamin B Complex which contains one full milligram of natural thiamine, two milligrams of natural riboflavin, together with all the remaining members of the B complex concentrated in two tabules.

Supplied in bottles of 60 and 200 tabules.
Samples and literature available on request.

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†*Johnson, R. E., Darling, R. C., Forbes, W. H., Brouha, L., Egana, E. and Graybiel, A.: J. Nutrition, 24:585-95, Dec. 1942*

††*Pett, L. B., McKirdy, J. A. and Cantor, M. A.: Can. Med. J. 46:413, 1942*

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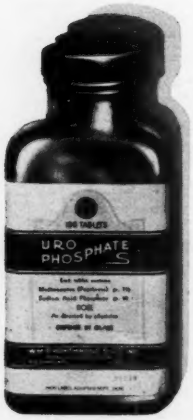

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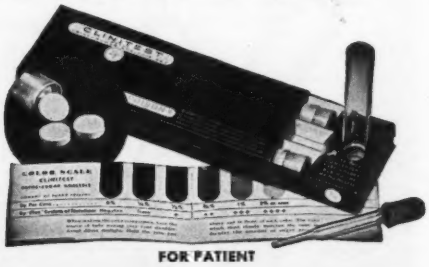

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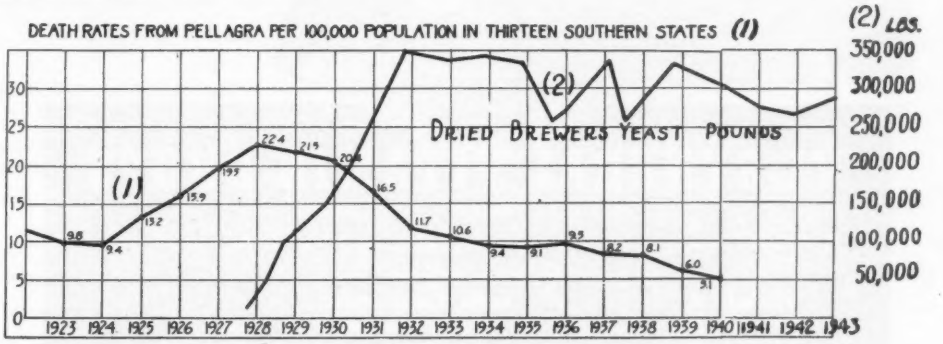

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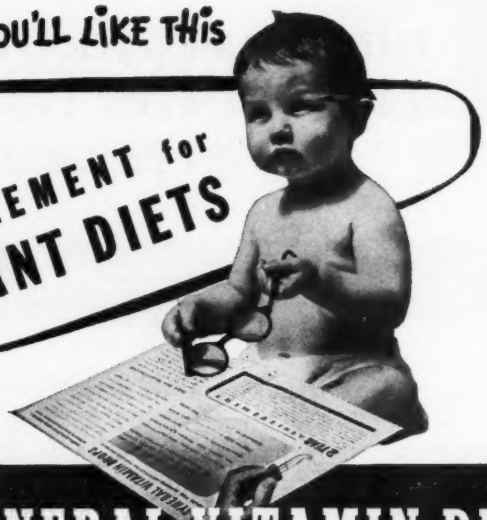

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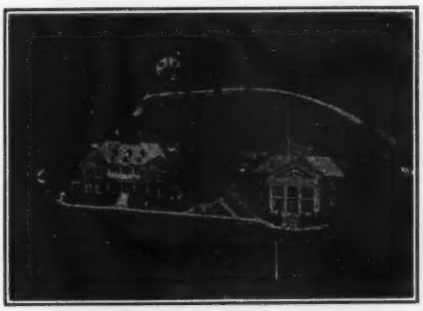

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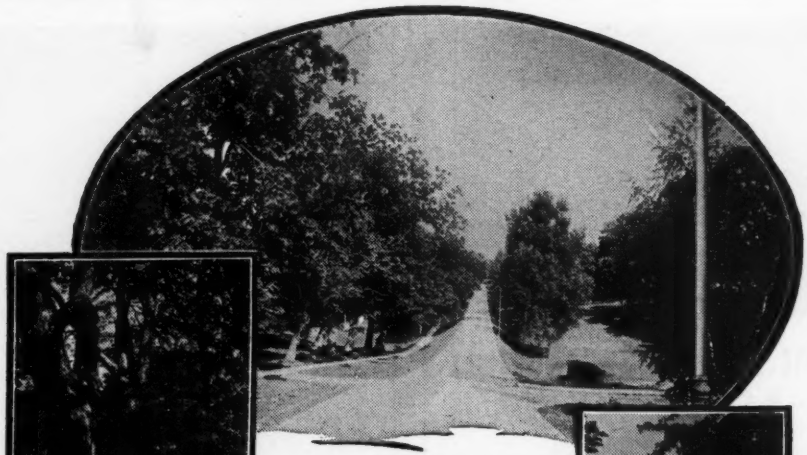

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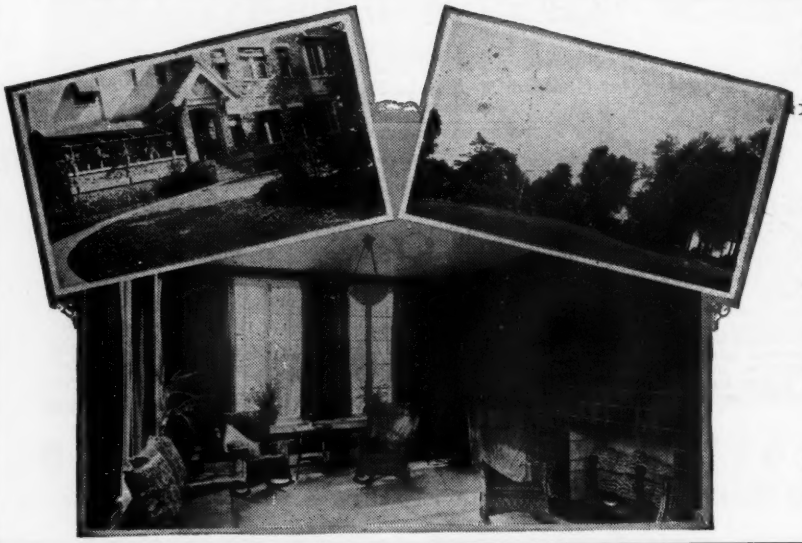

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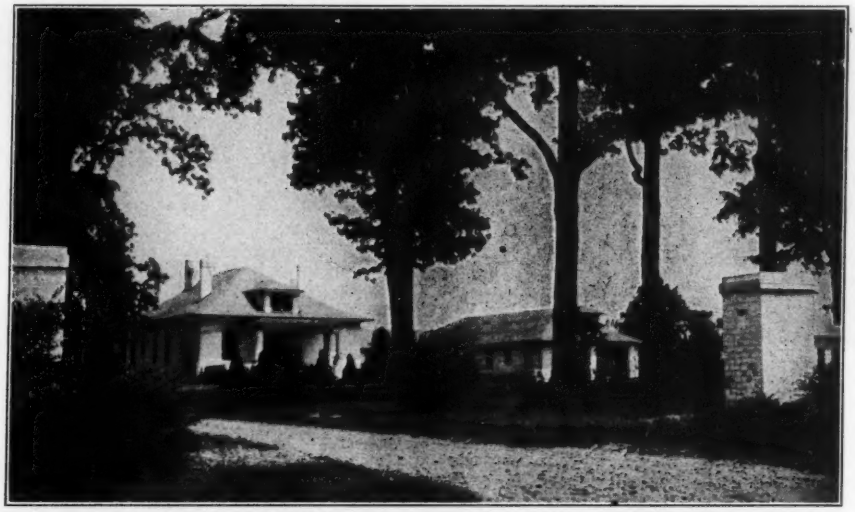

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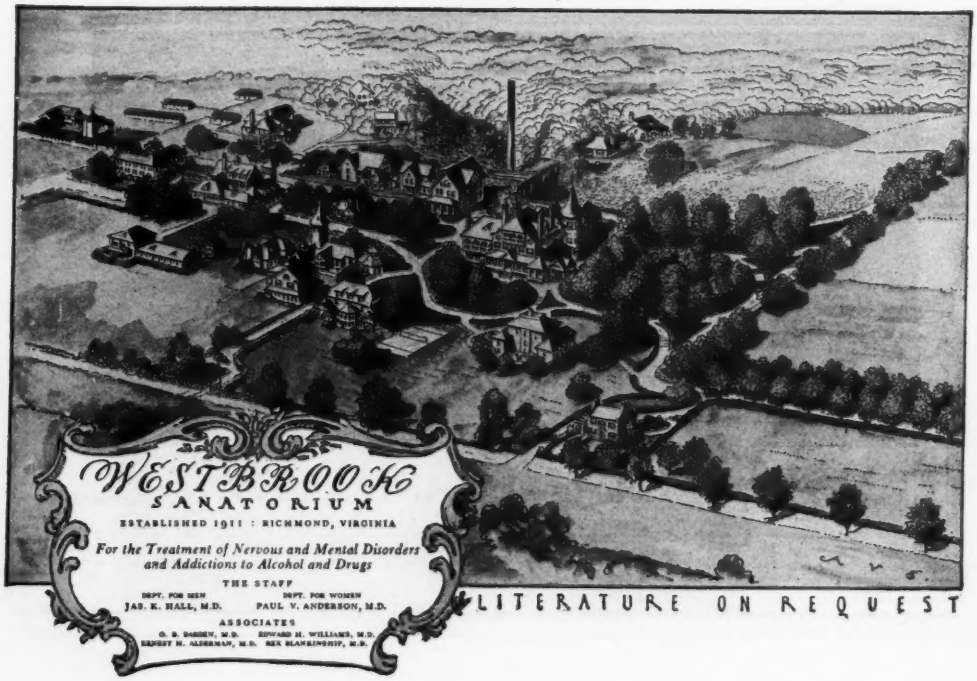

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*Drs. Frederick H. Falls, George H. Rezek and S. T. Benensohn, Surgery, Gynecology and Obstetrics, September, 1942, Vol. 75, pp. 289–299.

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JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY BY THE SOUTHERN MEDICAL ASSOCIATION AT BIRMINGHAM, ALA.

Volume 37 APRIL 1944 Number 4

SURGICAL RECONSTRUCTION FOLLOWING SERIOUS BURNS*

By VINTON E. SILER, M.D.
Cincinnati, Ohio

The problem of reconstruction of the integumentary system after destruction by a burn continues to be one of the main obstacles in the final recovery of the patient. It is almost universally agreed that superficial burns designated as first and second degree in depth, heal without grafting. Skin loss, with or without involvement of the deeper layers of the soft tissue, is from the very beginning, a major surgical problem. Too frequently, we do not consider the seriousness of this type of open wound. The purpose of this discussion is to evaluate the problem in the light of the present day concepts of surgery.

The final reconstructive result in any patient with a severe burn may depend to a large extent upon the initial treatment. In other reports[1 4] the procedure which we have adopted has been discussed in detail. The two underlying principles in "Primary Cleansing, Compression and Rest Treatment" of burns are first, consideration of the general treatment of the patient, and second, local treatment of the burned area.

It is logical to assume and clinically borne out that the most effective measures in general therapy are to control pain, to control hemoconcentration and prevent "thermal shock" by the parenteral administration of blood plasma and to prevent anoxia by oxygen therapy. Infection may be inhibited or controlled by the systemic use of sulfonamide drugs.

Local treatment of the burned area directly deals with the problem of reconstructive surgery. In almost every instance the initial therapy will govern when it can be done. Besides the numerous advantages which we believe ointment pressure dressings afford, the outstanding one is the fact that the wound from the very beginning permits any variation in treatment which may be demanded of the surgeon in order to start the grafting of skin. This reason, along with many others, has disseminated the use of ointment pressure dressings in the definitive treatment of burned areas.

After serious deep burns, reconstructive surgery should be considered from the standpoint of early and late skin grafting.

EARLY RECONSTRUCTIVE SURGERY

This division concerns itself with the covering of all raw areas. It is designated as the period dating from the time of the injury until the wounds are completely epithelized. Early reconstructive surgery may be further divided into immediate and delayed skin grafting procedures.

(1) *Immediate Skin Grafting.* — In 1942, Young[5] reported a case in which immediate skin grafting was used after a burn. This procedure envelopes the ideal goal, except that from a practical standpoint there are definite limitations placed upon its use. To carry out this procedure it must be assumed that the patient does not have an extensive deep burn; also it must be assumed that the condition of the patient will permit a sufficiently long general anesthetic primarily to excise the totally destroyed area. Moreover, it assumes that the surgeon can decide at the moment which areas are third degree burns against those with only partial skin destruction.

In very carefully selected cases perhaps immediate free grafting can be done. In our experience, extensive deep burns could not be treated in this manner, as the time required and the condition of the patient would prohibit such a measure. Furthermore, most observers have been impressed with the fact that those areas

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*Read in General Clinical Session, Kentucky and Ohio Day, Southern Medical Association, Thirty-Seventh Annual Meeting, Cincinnati, Ohio, November 16-18, 1943.

*From the Department of Surgery, College of Medicine of the University of Cincinnati, and the Cincinnati General Hospital, Cincinnati, Ohio.

which were initially considered to be totally destroyed regions, were later recognized (two to four weeks) as only partially lost. The converse of this has also been true. For these reasons we have not adopted the procedure of immediate skin grafting.

Case 1.—J. J., a colored girl, aged 10 years, received a burn of her right chest wall, right axilla and right upper arm after her clothing caught fire. She was admitted to the Cincinnati General Hospital soon after the injury. On examination the involved skin appeared to be seriously burned; however, on close inspection at this time we could not say truthfully which did or did not represent total skin destruction. Definitive treatment of the local area consisted in ointment pressure dressings which were removed on the eleventh day. The wounds at this time revealed second and third degree areas, and with boric acid and Dakin's solution compresses, the demarcation of open wounds became more apparent. On her thirty-fifth hospital day small split-skin grafts were applied to these wounds and she was discharged on the fiftieth day entirely healed. In retrospect, we do not believe it possible to have determined accurately which areas should have been excised for immediate grafting.

(*2*) *Delayed Skin Grafting.*—All who have experienced the care required for a seriously burned patient fully realize the importance of early application of skin. With large open wounds the problems of controlling plasma loss, preventing hemorrhage from the granulating surface, controlling infection and the time required to do meticulous daily dressings, are only a few of the many difficulties which may confront the surgeon. By using ointment pressure dressings to the burned areas, the eventually deep open wounds can be divided into three general types:

(*a*) *A Clinically Clean Wound.*—This wound permits the application of free grafts soon after the initial dressing; that is, ten to sixteen days after the injury. This is exemplified in the following case report.

Case 2.—R. J., a white boy, aged 3 years, received serious burns of the posterior portion of his entire body after having fallen backwards in a tub of scalding water. He was admitted to the Children's Hospital. The definitive treatment was an ointment pressure dressing which remained intact for thirteen days. At the initial dressing, which was done in the operating room, clinically clean open wounds were observed in the lower thoracic regions posteriorly and also on the right forearm. At this time small split-skin grafts were applied. All wounds epithelized rapidly and the patient was discharged on the twenty-fifth hospital day.

(*b*) *An Infected Wound with Minimal Tissue Slough.*—This represents a deep wound which is grossly infected. The use of fine mesh gauze over the area with continuous physiologic saline or boric acid wet dressings for 48 to 72 hours will aid considerably in bringing the infection under control. Subsequent dressings of sodium hypochlorite solution moistened every four hours and changed daily will expedite the time required to prepare the wound for grafting. Clinical experimentation with various substances has revealed that Dakin's solution acts as the most effective means of controlling infection.

Case 3 (*Fig. 1*).—M. P., a negress, aged 44 years, received a serious 40 per cent (Berkow) burn of her back, upper extremities, right chest wall and breast, buttocks, left thigh and leg, and posterior aspect of right leg after her clothing caught fire. She was admitted to the Cincinnati General Hospital immediately. After general therapeutic measures had been given, pressure ointment dressings were applied to the burned areas. Because of a marked febrile course these dressings were removed on the seventh day. Gross infection was noted, but there was no excessive sloughing tissue. By using boric acid and Dakin's solution compresses the infection was brought under control (*Fig. 1, A* and *B*, show the large open granulating wounds). On the twenty-fifth and fiftieth hospital days, respectively, these wounds were covered with small split-skin grafts and epithelization progressed to complete healing (*Fig. 1, C, D* and *E*). She was discharged on the seventy-fourth hospital day.

(*c*) *An Infected Wound with Sloughing Tissue.*—This type of deep burn is perhaps the most difficult of all to treat and prepare for grafting. The infection is usually deep in the necrotic tissue and therefore may be difficult to bring under control. This is particularly true if both anaerobic and aerobic organisms are present. Furthermore, the slough is not easily removed since demarcation of devitalized tissue is a slow and gradual process. The nature and type of infection usually determine the speed at which sloughing tissue can be trimmed away. In some instances it has been necessary to resort to surgical extirpation of the slough under general anesthesia.

Case 4 (*Fig. 2*).—L. H., a white boy, aged 6 years, received serious deep burns of both lower extremities along with more superficial burns of the left buttock and anterior abdominal wall. He was admitted to the Children's Hospital immediately. Ointment pressure dressings were applied and were removed on the eighth day because of the marked febrile course. Both legs and thighs revealed not only infection but marked sloughing of the tissue (*Fig. 2, A* and *B*). Under general anesthesia this slough was cut away and lanolin pressure dressings were applied. Immobilization was maintained with plaster casts. On the fourteenth day these dressings were removed from the legs and the granulating wounds were prepared for grafting, using boric acid and Dakin's solution compresses. The left leg was grafted on the twenty-first day and the right leg on the fifty-eighth day. Delay in grafting of the latter was due to a chest complication, probably pulmonary edema or thrombosis. Within the average time interval complete

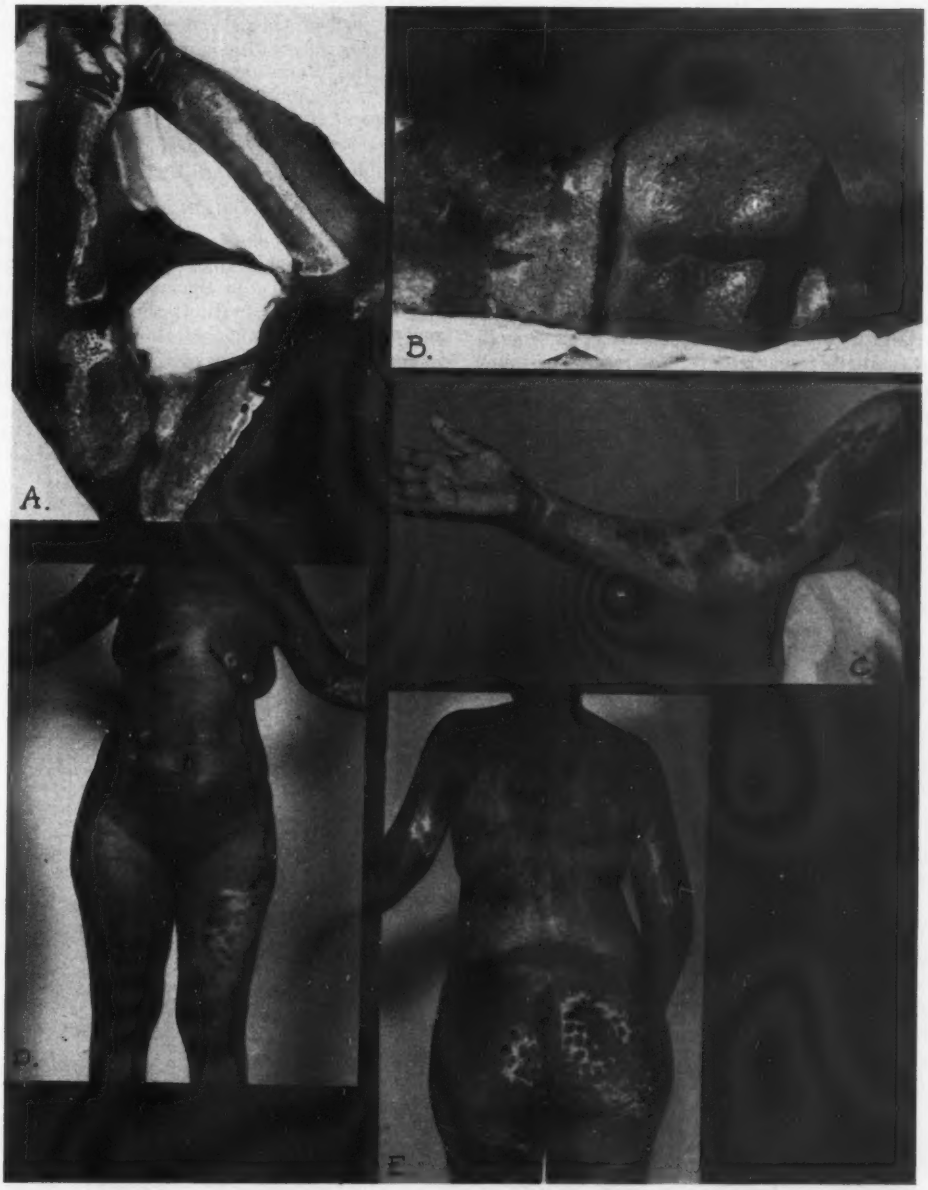

Fig. 1, Case 3, M.P.
A and B. Deep open wounds after control of infection. C, D and E. Wounds completely healed after the application of small thick split-skin grafts.

healing occurred; however, the patient developed marked flexor contractures in both popliteal fossae since the injury extended down to the hamstring muscles. Because of these contractures this patient remained in the hospital and late reconstructive surgery was done. The contractures were released and large split-skin grafts were applied to each popliteal fossa (*Fig. 2, C* and *D* show the condition of the patient on discharge from the hospital ten months and twelve days after his injury).

Delayed skin grafting is now accepted as the procedure of choice for closure of large open burn wounds. There are, however, several principles which should be mentioned. Since skin has been destroyed, early skin replacement is the slogan of which we should be mindful. Most of us talk about early closure of the open wound, but actually our case records reveal a much longer interval of open granulating bed than is anticipated. It is very easy to delay grafting day after day until weeks have passed. A few of our common excuses are that the wound is still slightly infected, the granulation tissue is exuberant, there is too much bleeding from the granulating surface when the dressings are removed, or the general condition of the patient will not permit the procedure. Most of these reasons are more apparent than real, and actually skin replacement could have been done much earlier.

There are several acceptable methods of accomplishing early skin grafting.

REVERDIN OR PINCH GRAFTS

These small circular free grafts represent varying degrees of skin thickness, the central portion being almost full thickness in depth with a gradual tapering to the periphery. Surgeons generally use this type of skin graft for open wounds other than those produced by burns, the chief advantages being that they can be easily obtained, are quickly applied, and give rise eventually to a thick protective epithelial covering. The chief disadvantages are infected granulation tissue interspersed among them some-

Fig. 2, Case 4, L.H.

A and B. Anterior and posterior views of the lower extremities showing a deep burn with sloughing infected tissue. C and D. Anterior and posterior views of the lower extremities showing complete healed wounds. Note the thick split-skin dermatome graft in both popliteal fossae (D).

times causes a rubbery type of skin, epithelial proliferation may be slow, and it is difficult to cover extensive areas of the body surface. On occasions we use this type of graft, but nearly always excise the donor site and thus create a closed wound which should heal per primam.

THICK SPLIT-SKIN GRAFT

This type of graft has been adequately described by Brown and McDowell.[6] The thick split-skin graft as he has pointed out differs from the Ollier-Thiersch graft only in degree of thickness. A great many surgeons prefer the application of the entire sheet of skin over the granulating tissue bed. This graft may be held in place by a continuous silk suture around its edge and with multiple basting sutures over the surface. The grafted area is covered with fine mesh gauze and a pressure dressing is maintained for four to ten days. When the area is dressed the sutures can be removed and necrotic skin cut away. Blebs and small hematoma areas can be evacuated. Firm pressure dressings are always reapplied. This technic assumes the wounds to be fairly clean before grafting is attempted. In our experience grafting can be done much sooner by a modification of this procedure.

"POSTAGE STAMP" THICK SPLIT-SKIN GRAFTS

The open wound is prepared for grafting as readily as possible. Sloughing tissue is removed with each daily dressing. Infection is controlled as soon as possible by Dakinization of the wound. Even though there is evidence of gross infection, skin grafts may be applied when the granulation tissue appears red. The wounds are always covered with fine mesh gauze (No. 44) so that granulations will not grow up through the coarser meshes of the overlying surgical gauze. This would permit them to stick, cause painful removal and sometimes excessive hemorrhage.

Thick split-skin grafts may be obtained either free-hand or by using the dermatome. There are advantages with either technic. If one is apt at free-hand cutting, the procedure is faster and more skin can be obtained per unit time expended. General anesthesia is almost always required.

Using the dermatome, skin may be obtained more uniformly, it may be taken over bony prominences and furthermore can be cut under local regional block anesthesia.

The donor site is covered with fine mesh gauze impregnated with either white vaseline or anhydrous wool fat. A surgical pressure dressing completely covers this area, using both sterile mechanics' waste and large folded gauze rolls to create pressure. Meticulous care of the donor's site is important to prevent infection and a prolonged granulating wound. Little is gained if one area of the body is denuded at the expense of another.

The thick split-skin graft, however, obtained can be better manipulated if placed on a large sheet of gutta-percha. The graft should be moistened with physiological saline solution. Small "postage-stamp" grafts are then cut so that they measure about 1 cm. square. These are placed on the open wound in any desired pattern, removing the gutta-percha at the time of application. These "postage-stamp" grafts can be placed as close together as is indicated in each particular case. After the grafts have been placed, the open wound is covered with a single thickness surgical gauze dressing and its edge is held to normal skin by collodion. The wound remains open to the air for eight hours which permits the grafts to "seat" themselves. Subsequently, continuous saline surgical pressure dressings are applied, and although moistened every four hours, remain undisturbed for 48 hours. The dressings are removed down to the single thickness gauze at the end of this period and the amount of exudate governs which solution is to be reapplied. If there is considerable drainage, continuous Dakin's dressings are used until the infection is well under control. Pyocyaneus infection may be inhibited by using one-half per cent acetic acid wet dressings. By the end of the fifth or sixth day, the single thickness gauze dressing is removed and proliferative epithelization usually continues at a rapid pace. As the discharge subsides, the grafted area is exposed to the air and as soon as possible fine mesh ointment gauze is applied daily until complete healing has occurred.

Using this technic, we have grafted large open wounds as early as the sixteenth day after injury, and in some instances the wounds were completely covered with skin by the thirtieth day of hospitalization. The advantages of the "postage-stamp" thick split-skin grafts are:

(1) Skin can be applied earlier than by any other procedure.

(2) Grafts can be applied in the presence of gross infection, while the latter is being brought under control.

(3) Minimal amounts of skin can be utilized to cover a large area.

(4) There is less risk of losing skin with the small multiple grafts than with a larger single sheet.

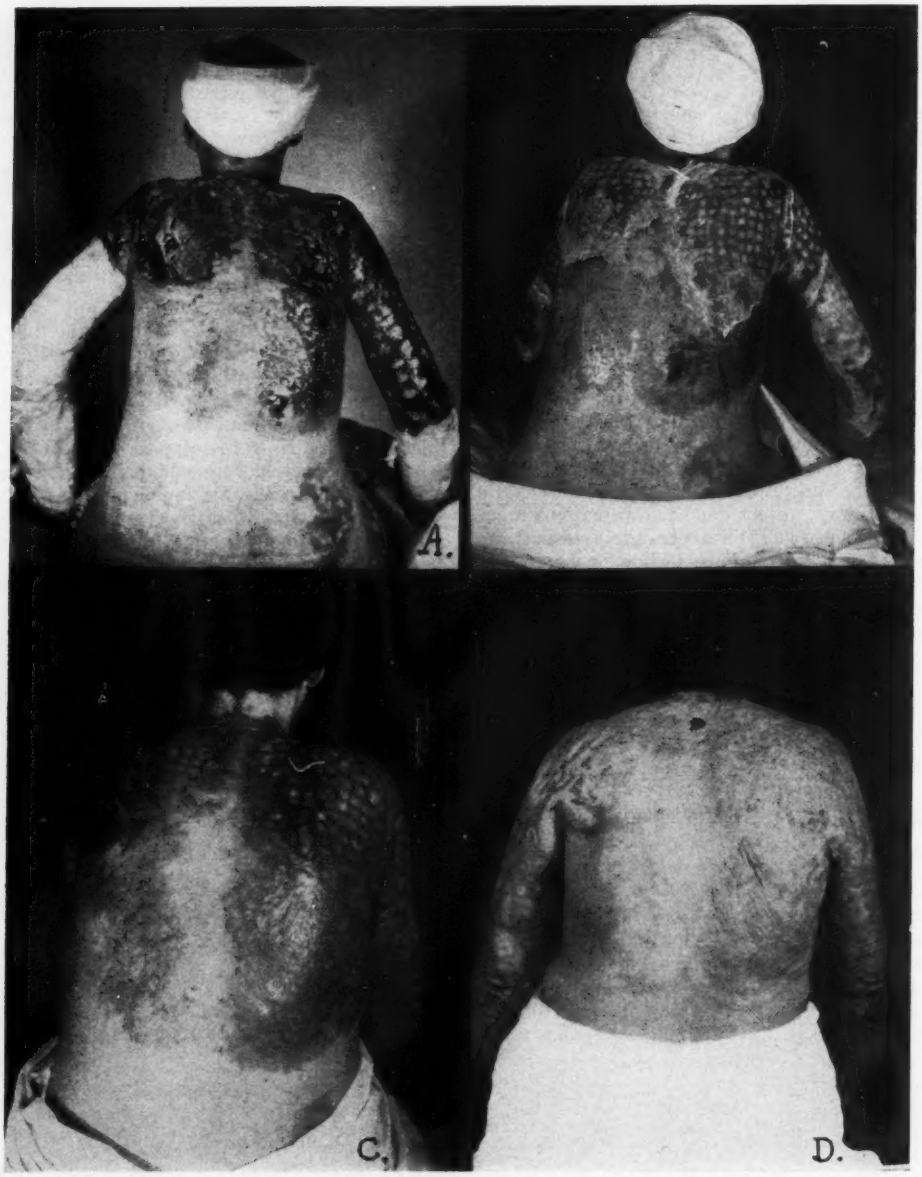

Fig. 3, Case 5, A. H.

A. Posterior view of back and upper extremities showing the extensive deep open wounds. B. Same view immediately after the application of "postage stamp" thick split-skin grafts. C. Same view showing complete healing of all wounds. D. Same view showing the condition of her burned area eighteen months after discharge from the hospital.

These advantages are extremely important if an open wound involves 20 per cent or more of the total body surface.

Case 5 (*Fig. 3*).—A. H., a white woman, aged 21 years four and one-half months pregnant received a 52 per cent (Berkow) second and third degree burn after a gasoline explosion in her home. She was admitted to the Cincinnati General Hospital immediately and general treatment was given. Definitive treatment consisted in cleansing of the burned areas and pressure dressings were applied. These dressings remained in place for 13 days and when removed large open wounds were noted on the neck, upper back and both upper extremities. The wounds were prepared for grafting by saline and Dakin's solution compresses. In two stages "postage-stamp" thick split-skin grafts were applied to the granulating wounds. The wounds healed completely and she was discharged on the one hundred thirtieth hospital day.

HOMOGRAFTS

As has been discussed by Brown,[7] Bettman[8] and other observers, split homografting may prove on occasions to be a life-saving measure in the extensively serious burned patient who becomes debilitated from anemia, infection, hypoproteinemia and pain. Usually the split homograft is obtained from a donor of the same blood group, although there seems to be no real connection between the "take" of the graft and the blood group relationship. The patient may be relieved from pain and the general physiological picture improved during the three to six-week period that the grafts remain on the wound. Homografts usually survive from three to ten weeks and then absorb slowly, leaving a clean granulating surface. The patient's own epithelial structure may be stimulated by such a procedure and even though the grafts absorb, a great deal of progress may be gained.

LATE RECONSTRUCTIVE SURGERY

Late reconstructive surgery deals primarily with the correction of contractures and deformities. The two fundamental purposes of such surgery are: repair of contractures which will restore useful function of a part and removal of a conspicuous deformity which handicaps the patient in his normal daily contacts. Both procedures are usually important in regard to the mental attitude of any burn patient.

Late plastic repair is almost always an elective procedure. Speed as to time for repair, and speed during the operation, are usually secondary issues, inasmuch as slow meticulous reconstruction may prevent disastrous results.

THICK SPLIT-SKIN GRAFTS

This type of graft is exceedingly useful in correction of contractures and deformities of the trunk and extremities. The primary location where such grafts are used to the best advantage, are the hands and forearms, the elbow regions, the axillae and the popliteal fossae. It is usually wise to excise the area of constructure or deformity first, removing all scar down to normal tissue. This insures a good blood supply for the graft and also more nearly corrects the defect in the involved region. The wound is usually larger than one would anticipate, hence the graft can be cut according to the size of the defect. In our experience the thick split-skin dermatome graft is excellent since it is uniform in thickness and can be varied to suit the occasion. We have found that splinting the part, particularly when grafting the extremities, is very helpful in producing a good "take," inasmuch as rest promotes rapid healing.

Case 6 (*Fig. 4*).—E. J., a white child, aged 2 years, was admitted to the hospital in a neighboring city after having received severe deep burns of the extensor surfaces of both hands and forearms and the external portion of the left arm and shoulder, including the left side of her face and neck. Definitive treatment consisted of cleansing of the wounds, after which tannic acid spray was applied, supplemented with sulfadiazine spray. By the twentieth day deep open infected wounds were noted on the extensor surfaces of both hands and forearms, the left arm, shoulder and left side of the neck. Homografts, taken from her mother, were applied because her general condition did not warrant isografting. This apparently helped improve her general condition; however, the wounds remained open and infected after the dissolution of the homografts. By persistent cleanliness of the wounds, along with "postage-stamp" thick split-grafts, complete healing was obtained about six months after the injury. At this time there was marked extensor contracture at both wrists, a flexor contracture of the left elbow and a serious contracture of the left neck with deformity of the face. Approximately eight months after injury the cicatrix of the left upper extremity was excised and a dermatome thick split-skin graft was applied. At two subsequent operative procedures the contractures of the right hand and forearm, as well as the left side of the neck, were corrected by similar grafts. The time required was 459 hospital days.

Case 7.—R. C., a white male, aged 23 years, received serious deep burns of his face, ears, both upper extremities, chest, back and posterior portion of both thighs when his clothing was set aflame after an explosion in a varnish factory. The definitive hospital treatment of the burned area was tannic acid and silver nitrate spray. Open infected wounds were noted on the ears, face, back, and particularly both forearms and hands. By means of Reverdin grafts these wounds were closed on his fifty-eighth hospital day. During his convalescence the patient noticed that the skin of both

forearms and hands remained irregular and rubbery thick. The extensor contractures of both hands were so marked that he could not hold a drinking glass. Many areas on the upper extremities would ulcerate from time to time. The function of both hands was so impaired that he could not work.

A year after his initial injury reconstruction of both forearms and hands was started. At two separate stages the thickened keloid tissue on the dorsum of both wrists and hands was removed and dermatome thick split-skin grafts were applied. The final functional result was good, permitting the patient to return to his work.

FULL THICKNESS SKIN GRAFTS.

This type of skin grafting is utilized to the best advantage in late reconstructive surgery. When the surface is constantly exposed to the

Fig. 4, Case 6, E. J.

A. Dorsal view of right hand and forearm showing marked keloid formation and a slowly healing open wound of wrist and hand. B. Left lateral view showing contracture of neck and extensor contracture of left wrist and hand. C. View of left side of neck after excision of contracture and application of a thick split-skin graft. D. Dorsal view of both forearm and hands after removal of contracting scar tissue and application of thick split-skin grafts. E and F. View of hands after grafting with fingers extended and flexed.

outside elements and trauma, such as the skin of the face, neck and palms of the hands, full thickness skin grafting should be considered. The surgeon must ever be aware that these grafts are more delicate to handle and that the "take" is more difficult and less certain than split-thickness grafting. Adequate knowledge in splinting of the part and in applying pressure over the graft are two factors in their successful growth.

This procedure should not be considered to cover open wounds following deep burns. The size of the graft required is prohibitive and will almost certainly be lost because of associated infection in these wounds.

PEDICLE FLAP GRAFTS

Pedicle flap grafting is only frequently indicated where bony prominences must be covered with subcutaneous tissue and skin. This type of reconstructive surgery is laborious for the surgeon and indeed expensive for the patient since hospitalization is prolonged and multiple operative procedures must be done before the expected end result is effected.

CONCLUSION

(1) Ointment pressure dressings permit early reconstructive surgery sooner than other types of definitive treatment for serious burns.

(2) With ointment pressure dressings there is, perhaps, less contracture and deformity than is seen with eschar methods of treating burns.

(3) Immediate skin grafting may be done in carefully selected cases; however, details of this procedure are in the experimental stage and it is not practicable at the present time.

(4) When skin is lost, "early skin replacement" is the principle to follow. This can be done consistently by using "postage stamp" thick split-skin grafts.

(5) We agree with Brown and other observers that best results are obtained in late reconstructive surgery by using large thick split-skin grafts to correct contractures and deformities.

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DISCUSSION

(Questions and Answers)

Question.—I should like to ask if the Doctor has found any striking difference between the homograft and the non-homograft?

Dr. Siler.—We have not done a large amount of homografting. As a matter of fact, we have not done as much as we should. I think it is agreed by everyone, including Blair and Brown, that homografts will not live more than three to ten weeks. There is only one case that I know of where homografts survived, and that is the case reported by Brown. Furthermore, there is no relationship between the blood donor and the "take" of the grafts in homografting. We have not used it because we feel that isografting is much better.

Question.—I should like to ask if Dr. Siler finds it more advantageous to use this split thickness graft of the skin on the back of the neck than a pedicle graft?

Dr. Siler.—I think most of the plastic surgeons believe that pedicle grafting should be limited and thought over very carefully. Pedicle grafting is very laborious, and besides, the expense of the patient in the hospital is tremendous. Frankly I think almost everybody now agrees that split thickness grafting can be done in most areas where previously pedicle flap grafts were employed.

Question.—Have you had any experience with the new "Sano" method practiced in Philadelphia?

Dr. Siler.—No, we have had no experience with it.

A METHOD FOR FUSION OF THE WRIST*

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Fusion of the wrist joint may occasionally become desirable or necessary. It is true that the dexterity normally enjoyed by the hand is to some degree lost when the wrist is fused, but it is quite remarkable how functionally useful the hand will remain with the wrist placed in the fixed cocked-up position. One can easily demonstrate the difference in the grasping power when the wrist is held in flexion and when it is in extension and easily assure himself that the cocked-up attitude is one of strength and the flexed position one of weakness. Fusion of the wrist is infrequently indicated in comparison with arthrodesis of the foot, spine or hip, but

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there are certain conditions in which the operation is definitely worthwhile. The impaired preoperative function of the fingers is so much improved by wrist fusion that this simple procedure which has been found satisfactory for the past ten years is thought to be worth reporting.

Indications for the operation will be found in at least four types of conditions. First, in chronic inflammatory lesions involving the wrist joint, whether tuberculous or non-tuberculous, the improperly protected wrist assumes a flexed attitude. This position of weakness not only limits the power in the fingers, but the pain that is present on movement also becomes a very prominent symptom. When the x-ray reveals an extensive destructive arthritis it is fair to assume that a return of normal motion will never occur. The problem then is how to convert the deformed, painful wrist into a useful and painless joint. Tuberculosis of the wrist joint should be fused early before extensive bone destruction or multiple sinuses have developed. In the late stages of tuberculosis of the wrist it may be too late to fuse the joint and amputation may become necessary.

Second, in certain spastic paralytic conditions, particularly spastic hemiplegia, the hand is held in marked flexion and the forearm in pronation, an attitude which makes the hand relatively useless. In the spastic case, whether it be due to the cerebral palsy of childhood or some cerebral accident in adult life, whenever the deformity is of long standing there will usually be found a marked degree of soft tissue contraction complicating the picture. These cases frequently necessitate a preliminary stretching or tenotomy. In some instances muscle transplantation of the flexor muscles of the wrist into the extensors may be desirable before wrist fusion is done.

Third, in selected cases following infantile paralysis a fusion of the wrist may allow the child to utilize the remaining muscles to better advantage. In isolated cases the perfectly flail wrist also may be advantageously fused in a straight or slightly cocked-up position simply to permit the hand to go more easily into the coat sleeves or to make it less conspicuous. In any case of infantile paralysis, however, a careful evaluation of the residual muscle power must always be made. Transplantation of the strong flexor muscles of the wrist into the weak extensors may not only increase the active function about the wrist, but may obviate the need for an arthrodesis.

Fourth, severe local injuries to the wrist joint may give rise to a marked degree of traumatic arthritis of the carpal bones with or without fracture. This will be accompanied by a wrist flexion deformity and severe pain on attempted movement. Here it is better in selected cases to sacrifice mobility and achieve a painless wrist and useful finger movement by means of wrist fusion.

Because some of the bone growth of the long bones occurs at the distal end of the radius and proximal end of the metacarpals this operation is usually delayed until there is x-ray evidence of normal epiphyseal fusion. This occurs usually at about the age of 16 to 18. At times, however, it is desirable to have the wrist fusion operation performed a little earlier than this age. The nearer to the epiphyseal closure time it is done the less shortening of the forearm will result. In the adolescent age period if fusion becomes desirable it is wise to do intentionally an epiphys-

Fig. 1
Showing line of dorsal incision and elective position of dorsiflexion.

eal arrest on the lower end of the radius and ulna at the time of the wrist fusion in order that the arrest of growth be interrupted uniformly.

There are several operative procedures commonly used to fuse the wrist joint surgically. They utilize the principle of supplying additional bone to the wrist region, whether in the form of bone chips or by the introduction of an autogenous graft which will bridge the gap from the radius to the metacarpals. The use of an osteoperiosteal tibial graft has been frequently recommended. The whole thickness tibial graft is employed in a somewhat similar way. The sliding radial graft from the shaft of the same radius has been employed. Some have added bone chip grafts which have been packed in and about the area at the wrist or the chip grafts have been used alone, obtaining them from some other source of bone supply.

The method described in this paper has been employed in a number of cases and we can recommend it both from the ease of obtaining the graft at the time of the operation and the rapid degree of fusion obtained by the method. Briefly, it consists of a rib graft removed from the lateral surface of the chest wall on the same side as the wrist that is to be fused. The rib graft is split in half longitudinally, using the medial portion of the split rib. This is curved naturally in just about the right degree to fit into the cocked-up wrist. This permits the marrow cavity of the rib graft to be closely approximated to the underlying denuded bone of the wrist joint. The other half of the rib may be cut up in small chips with rongeur forceps and packed about the split rib graft as an additional bone-forming element, although the use of the chips has not been routinely followed and does not appear necessary to obtain solid bony wrist fusion.

THE TECHNIC

Under a blood pressure tourniquet and with the forearm in the pronated position, a 3 - inch incision is made just medial to the extensor indices tendon. The extensor longus pollicis tendon is retracted medially while the extensor indices and common extensors are retracted laterally. The dorsum of the lower end of the radius, the carpal bones and the proximal third of the second and third metacarpal bones are exposed. If the fusion is to be done on a traumatic or arthritic wrist the cartilage is curetted from the articular surfaces between the carpal bones and the adjacent metacarpals and lower end of the radius, but in the infected or inflammatory type of case complete denuding of the carpal cartilage is neither desirable or necessary. In certain non-inflammatory cases a dorsal wedge osteotomy may be necessary to correct a severe wrist flexion deformity, allowing the wrist to be brought up more easily into its slightly cocked-up position.

A bed is then prepared for the rib graft by making a cleft near the base of the second and third metacarpals and another in the lower end of the radius. A bony trough is completed for receiving a rib graft. At this time one of the lower true ribs is exposed on the lateral surface of the chest wall, starting the incision at the posterior axillary line and curving anteriorly for several inches. The periosteum is split and with a periosteal stripper the rib exposed for about 3 inches. When the required amount of rib has

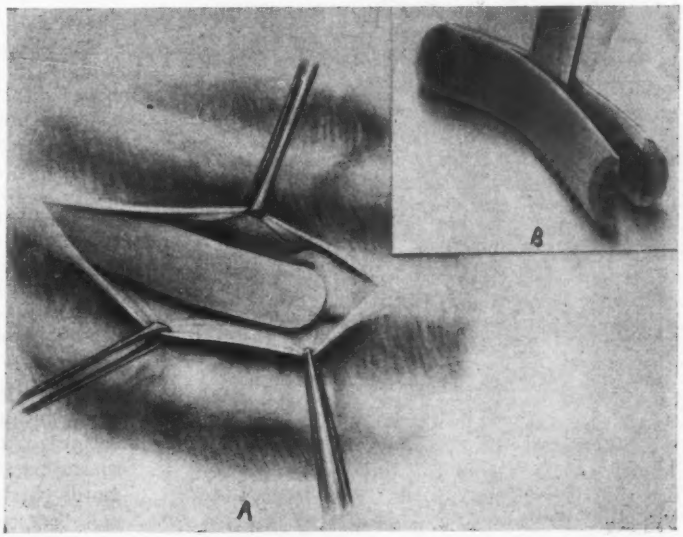

Fig. 2
(A) Periosteum of rib retracted and bone exposed and divided. (B) Removed rib graft split longitudinally, retaining (C) for rib graft.

been exposed and stripped of its periosteum it is divided obliquely at the ends. By making an oblique cut with the rib cutter at the time of the rib removal, a more secure fit will be obtained when the graft is placed in the prepared slots on the dorsum of the wrist. The rib is then split longitudinally with an osteotome and the medial half fitted into the prepared area with the medullary surface resting snugly against the underlying raw bone. The periosteum over the rib is carefully closed with fine chromic catgut and the wound closed in the usual manner.

The natural curve of the rib when it is firmly imbedded in its prepared bed usually gives the desired degree of cocked-up position to the wrist. If the hand is placed in slight ulnar deviation the grasping power of the fingers is improved. We have employed a simple position test in placing the graft. The longitudinal axis of the first metacarpal bone and the shaft of the radius are simply placed in a straight line. This method permits the desired attitude to be easily and conveniently checked at the operating table before plaster is applied. The wound is closed in layers in the usual manner and a circular plaster applied from the middle of the arm to the metacarpophalangeal joints, keeping the hand in the required dorsiflexed and ulnar deviated position. The elbow is held flexed to a right-angled position and the forearm midway between pronation and supination.

The marrow cavity of the rib seems to be particularly rich in osteogenic elements. We have felt that bony union has been more rapidly obtained in these cases of split rib grafts than in the tibial or sliding bone graft procedures. Bony union can usually be demonstrated at 8 to 10 weeks following the operation, but support in the cocked-up attitude is recommended for at least 16 weeks following operation. The exact time of support must be determined ultimately by the x-rays. There are several other advantages that have appealed to us in the use of this type of graft. One is the short period of bed care that these patients require. When either the tibial or osteoperiosteal graft of the tibia is used care must be taken to prevent these patients from weight bearing until the tibial wound and bone have healed sufficiently. In the rib graft the patient usually becomes ambulatory after the first week. Another advantage we feel is that the removal of the rib is not accompanied by any great discomfort and certainly the patients can be discharged home in a much shorter period of time.

Fig. 3
(A) Wrist prepared as described. (B) Split rib graft in position.

The ease in obtaining a rib graft is very striking. It usually can be exposed and removed within 5 minutes after the wrist bed has been prepared. If desired, two teams can work simultaneously and the graft be made ready while the wrist area is being prepared for its reception. The natural conformation of the rib curve and its advantage in this respect have been mentioned. The periosteum covering the ribs is strong and firm and can easily be resutured, forming a periosteal sleeve at the site of the removed rib in which new bone is rapidly produced.

A point to be remembered in fusion of any joint about which there is an imbalance of muscle power, as in cases of spastic paralysis and certain cases of infantile paralysis, is that over-active muscle pull is a constantly acting force during the interval between the operation and the time bony fusion occurs. This unequal

muscle pull may be a real difficulty in postoperatively disturbing the position in which the wrist is placed at the time of operation. Therefore, in certain cases a tenotomy of the wrist flexors may be advisable at the time of wrist fusion. If these strong muscles can be utilized by transplanting them into certain of the weak extensor group it may be desirable to do this as a preliminary to the wrist fusion operation.

A simple and effective method for fusion of the wrist with the indications and technic for its use has been presented.

THE ETIOLOGY AND SURGICAL TREATMENT OF LUNG ABSCESS*

IMPORTANCE OF LOBECTOMY

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Hippocrates[13] recognized pulmonary abscess and since that time its etiology has been studied and many have struggled with its treatment. The relative volume of medical literature upon a disease whose incidence is small indicates that the etiology has not been discovered nor has the proper method of treatment been established.

The frequency of occurrence can roughly be approximated among the ill by considering the fact that over a ten-year period only eleven persons developed lung abscess after admission to University Hospital. The incidence is thus one in 7,793 admissions. Over a three-year period in Baltimore City, with an approximate population of 900,000, the average yearly death rate was: lung abscess, 12; pulmonary tuberculosis, 759; pneumonia and influenza, 715.[4] At University Hospital during the ten-year period from January, 1933, to December, 1942, a diagnosis of lung abscess was made in 122 cases, whereas pneumonia was found in 4,025 instances.

In accepting the 122 cases for study only those diagnosed by roentgenogram, operation or autopsy were considered. With some reluctance the thirty-one cases diagnosed only by autopsy were accepted, since they probably shed some light on incidence, etiology, and prognosis.

Two thoughts on the etiology, both with various side issues, have been accepted for years. The aspiration theory seems to be winning out over the embolic theory.[10] Richardson[22] in 1912, pointed out the possible sequence of tonsillectomy, anesthesia, and lung abscess. Myerson[17] in 1924 showed that in 100 patients undergoing tonsillectomy the cough reflex was abolished in seventy-eight; seventy-two of these had blood and mucus below the larynx; and four of the twenty-two whose cough reflex was not abolished showed the same findings. In spite of this, Moore[16] reported the occurrence of one pulmonary abscess in every 2,500 to 3,000 tonsillectomies. In the present series ten of the 122 abscesses followed tonsillectomy; but, four others followed sore throat without operation. Hedblom[11] collected 2,458 cases of lung abscess from the medical literature and found that about 25 per cent followed operation. In the present series twenty-eight cases followed operation; however, during the last ten years only one lung abscess occurred to every 5,317 operations at University Hospital. The embolic theory has had its adherents. In the present series eight cases of lung abscess undoubtedly were caused by septicemia. Three hundred and six cases of septicemia were diagnosed during the ten-year period of study, and yet in only one of the eleven patients who developed an abscess after admission to the hospital was there a history of septicemia. Probably more cases would have been discovered if autopsies had been done in all deaths attributable to septicemia.

It becomes obvious that if either aspiration or emboli were the important factor in etiology there would be a greater incidence of lung abscess. This opinion led Myerson[18] to report that the failure to expel aspirated material from the lung is more important than the aspirated material and Travers[29] to say that it must take a favorable set of circumstances to produce a lung abscess.

Perhaps the etiology should be broken down into groups, or a classification of lung abscess should be used. The fetid or nonfetid groups mean little, since frequently the same case varies at different times and often neoarsphenamine will remove the odor without appreciably altering the clinical course of the patient. The cases which follow operation seem to vary considerably from those which occur without known

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cause or follow some disease such as pneumonia or an upper respiratory infection. Of twenty-eight patients whose abscess occurred after operation 6 or 21.4 per cent, died, and of these, three deaths surely were a part of the general sepsis which brought about the operation in the beginning. On the other hand, the mortality of the whole group was 49.1 per cent and if the twenty-eight cases occurring after operation are set aside the mortality is 57.1 per cent for cases developing after pneumonia, colds, and unknown causes. The cases of lung abscess which occur after or with septicemia seem entirely different from those previously mentioned and are usually multiple and bilateral. The mortality was 100 per cent for the eight cases.

Once the lung abscess has gone through the acute, simple or uncomplicated state it reaches the chronic or complicated state, which is indicated by a greater zone of pneumonitis and any one or all of the following: fibrosis, secondary bronchiectasis, more than one abscess in one lobe not communicated with each other, or more than one lobe being involved (*Figs. 5 to 7*). Overholt[20] called attention to the uncomplicated and complicated states and reported that 80 per cent of his cases reached the complicated condition about six weeks from the onset of the disease. It appears that whether the abscesses are postoperative in origin or the result of other diseases they all reach the same complicated state if the patients survive the initial onslaught and are not cured.

Attention to etiologic factors brings about preventive measures of greater or lesser importance. The incidence of postoperative lung abscess can be reduced by avoiding prolonged deep anesthesia, eliminating drugs which reduce cough reflex, using carbon dioxide inhalations, and by turning the patient frequently and encouraging him to cough. If after any type of operation the patient develops an atelectasis of the lung which is not promptly relieved by the aforementioned methods, he should be bronchoscoped. Bronchoscopy should be repeated until there is roentgenologic evidence that the atelectasis has been relieved entirely.

It is generally agreed that about one out of every five patients with lung abscess will recover spontaneously.[28] Adequate nonsurgical management undoubtedly will result in the early survival of many more patients.[6 14] The cure of one out of five patients and the mere survival of the patient without a cure of the abscess is not enough.

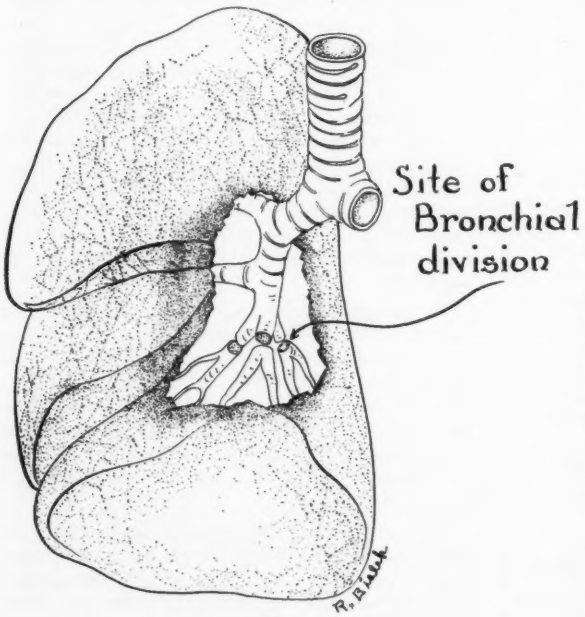

Fig. 1

Site of Choice for Division of Bronchi

In lobectomy for bronchiectasis postoperative opening of the bronchus or bronchi has not occurred when they were divided and sutured with silk at the level indicated by the drawing. Perhaps this is the site of choice for division of the bronchi in lobectomy for lung abscess.

In order to lower the mortality and increase the rate of cure, lung abscesses have been treated surgically. Boglivi[21] has been given credit for the first external drainage in 1696. Early drainage has been advocated by many. Hertzler[12] in 1921 wrote that lung abscesses diagnosed before rupture should be drained surgically. In spite of external drainage the mortality of lung abscess continued excessively high. Rives,[23] in 1938, gave an operative mortality of 29 per cent. Shaw and Blackman[26] reported surgical mortality of 40.6 per cent; Sweet[28] found a 26.6 per cent mortality. In the present series twenty patients were subjected to external drainage with a hospital mortality of 35 per cent. Combined surgical and nonsurgical management seems to produce no better results.

Great credit belongs to Neuhof,[19] who called attention to a group of

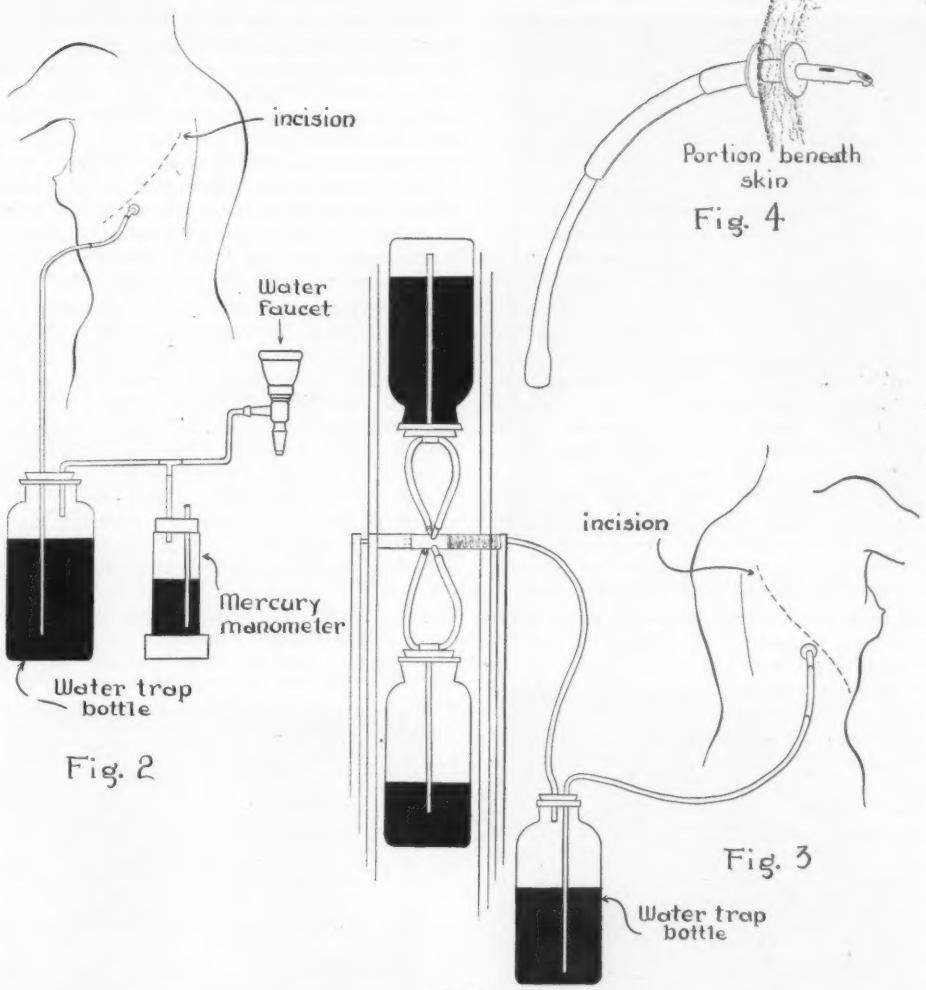

Fig. 2

A satisfactory method of applying controlled negative pressure to the pleural cavity.

A suction pump applied to an ordinary water faucet supplies the necessary energy, making the source of negative pressure readily accessible. The water vacuum pump will supply suction of large volume which is quite necessary for bronchopleural fistula. By placing a mercury manometer across the suction line the desired negative pressure can be accurately controlled. The water trap bottle will prevent aspiration of air into the pleural cavity in case the negative pressure fails.

Fig. 3

An alternate method of applying negative pressure to the pleural cavity.

The disadvantages are: (1) Negative pressure cannot be altered. (2) Volume delivered is small unless constantly attended. When negative pressure without volume is desired this method has the advantage of being silent.

Fig. 4

Method of drainage.

A short Brewer tube acts as a cannula through the chest wall through which a drainage tube is passed. The drainage tube can be easily changed under sterile conditions and this assures a patent tube. The tube can be retracted or advanced if the need arises. In order to obtain an air tight connection between the tubes a strong ligature should be placed around the Brewer tube. The flange on the Brewer tube should be vulcanized to the tube or made as one piece with the tube to prevent the flange from being lost in the pleural cavity when the Brewer tube is finally removed.

cases he termed acute. These cases presented a single abscess cavity in a single lobe, they were always peripheral to the lobe, and there was a minimal zone of pneumonitis, with no fibrosis and no secondary bronchiectasis. Through careful localization of the abscess by bronchoscopic visualization of the bronchus involved, by roentgenographic studies, and by equally careful and skillful surgery and postoperative treatment he was able to report thirty-seven cases with one death. He seemed reasonably to expect the remaining would be cured entirely. In 1942, he reported that he had 127 cases drained with only four deaths.[26]

By applying the same principle of treatment to the same type of abscess Overholt[20] reported 6 per cent mortality; Moore[15] had 9 per cent; and Shaw[26] found a mortality of 5 per cent. Isolated reports of low mortality have appeared in the past, but this is the first sustained group of reports with all the workers using the same method and obtaining equally good results. It seems that early drainage alone is not the complete answer to the problem. In the present series, during the past ten years, five cases were drained within six weeks of the onset and three died.

Overholt[20] took exception to the terms acute and chronic, especially as designated on the time basis of six weeks given by Neuhof or the eight to twelve weeks designated by Graham.[8] He was the first to suggest the term simple or uncomplicated abscess as against a complicated abscess and thus no time factor is used. He found that 80 per cent of the uncomplicated abscesses became complicated within six weeks of their onset. Moore[15] found that 58 per cent became complicated within two months from their onset.

For the complicated lung abscess the mortality rate continues extremely high and the cure rate low. The morbidity is often severe. Many workers have turned their thoughts to lobectomy in the treatment of lung abscess. Shipley[27] in 1928 wrote:

"Lobectomy may be done. This is a radical procedure—and has a high mortality rate. The patients who survive the operation are cured, however, and this is a big factor in favor of this procedure."

This thought and desire have progressed through the stages of cautery lobectomy, lobectomy secondary to drainage, and finally primary lobectomy.

The recognition of a group that can be classified as complicated or chronic and the advance in lung surgery make primary lobectomy the procedure of choice. It can no longer be called a radical procedure with a high mortality rate when it produces the lowest mortality rate and the highest rate of cure for this group of cases. In collecting primary lobectomies from the literature and adding the authors' eight cases a group of forty-two cases has been accumulated with a mortality of 19 per cent and a cure rate which will be exceptionally high (*Table 1*). This includes seven cases, three from Overholt and four from the authors of this series, in which more than one lobe was involved and removed. When more than one lobe is the site of lung abscess the mortality is notoriously higher.[28]

The technic of lobectomy is admirably described by Churchill[2] and others. In a primary lobectomy for complicated lung abscess the patient should be brought into the best possible physical condition by means of diet, minerals, and vitamins. He should receive adequate bronchoscopic drainage at least once each week in order to drain and keep the diseased lung as free of purulent material as possbile. This is of the utmost importance in preparing the ill patient for lobectomy.[9] Sulfathiazole or sulfadiazine should be administered about twenty-

PRIMARY PULMONARY RESECTION FOR LUNG ABSCESS
(Collected from Literature)

PRIMARY LOBECTOMY

Author	No. Cases	Deaths	Remarks
Churchill	12	2	
Sweet	6	1	
Overholt	6	1	
Overholt	3	2	These cases involved resection of more than one lobe
Ada[1]	2	0	Pneumothorax before operations, both had secondary thoracotomy for drainage of empyema
Finochietto[5]	1	0	
Daniels[3]	2	1	The one case not drained died
Moore, R. L.	2	Not stated	
Total	34	7	

PRIMARY PNEUMONECTOMY

Author	No. Cases	Deaths
Freedlander[7]	2	0
Overholt	4	2
Shaw[23]	1	0

Table 1

four hours before operation and continued a few days after operation as a prophylaxis against pneumonitis in the lobes remaining after operation. Whole blood transfusions should be given to bring the hemoglobin and red blood cell content to within the normal range. Even though the hemoglobin content is normal preoperatively a whole blood transfusion should be given the day before operation, since it then permits the operative procedure at the time the patient receives the greatest effects from it. Two pints of whole blood should be available at the time of operation and at least one given at this period. Artificial pneumothorax should be avoided as a preliminary to operation. It cannot be done without danger of blockage to the abscess or perforation into the pleural cavity. Furthermore, it may hinder rapid re-expansion of the remaining lobe or lobes and thus interfere with immediate obliteration of the pleural space. Intratracheal anesthesia should be used and the anesthetist should give strict attention to the aspiration of all material which enters the bronchus. If this is done, spills of infected material from the diseased lobe need not be feared.

At operation it would be preferable not to enter the abscess; however, the abscess was

Fig. 6

A Bronchogram of J. B. taken May 6, 1942.

Bronchiectasis is demonstrated about the abscess cavity. As is usually the case lipiodol did not enter the abscess cavity.

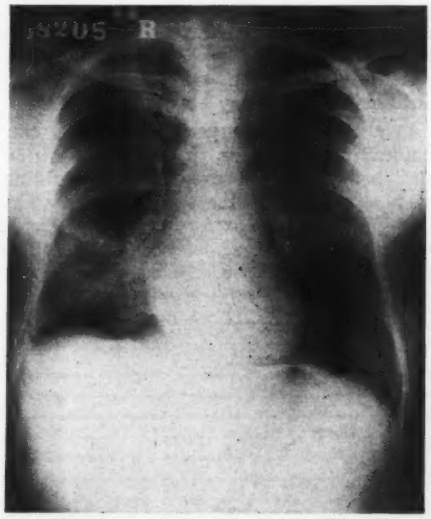

Fig. 5

Roentgenogram of J. B. made May 5, 1941.

At this date the abscess in the lower lobe of the right lung could easily have been a simple, uncomplicated (acute) abscess.

Fig. 7

Bronchiectasis revealed by a lateral roentgenogram of *Fig. 6*. *Figs. 6* and *7* demonstrate a complicated (chronic) lung abscess, the type for which primary lobectomy is indicated.

entered in all eight cases herein reported. The individual ligation of bronchi, arteries, and veins is desirable, but usually this cannot be accomplished. The use of a tourniquet is not necessary and may interfere with the removal of the lobe. In the seven patients who survived, all but one developed a bronchial fistula. With the recent experience in lobectomy for bronchiectasis it seems quite possible that bronchial fistulas may be avoided if the bronchi are cut across and closed with silk just distal to the main bronchus of the lobe (*Fig. 1*). Since this method has been used in lobectomy for bronchiectasis in no instance has the bronchus opened. After the lobe or lobes have been removed it is most important to free completely the remaining lobe or lobes from the parietal and mediastinal pleura, thus breaking down all adhesions which may be present. If the remaining lobe or lobes are entirely free from the parietal and mediastinal pleura, a symmetrical re-expansion can be expected which will completely fill the pleural space and thus avoid pleural infection and pocketing off of localized pleural abscesses. The normal lung or pleura is not sutured over the closed bronchial stump because it may thus interfere with symmetrical re-expansion. Five grams of sulfanilamide is sprinkled into the pleural cavity and then two ounces of sodium tetradecyl sulfate 1:500 in azochloramide 1:3300 is placed in the pleural cavity. The phrenic nerve is not crushed. The pleural cavity is drained below the original incision through an intercostal stab wound, but the drainage tube is placed high enough so as not to be obstructed by the diaphragm which will become elevated and adherent to the chest wall (*Fig. 2*). The anesthetist should not attempt to re-expand the remaining lobe or lobes by positive pressure for fear of implanting infected material deep in the remaining lung tissue on either side. The chest wall is closed with chromic catgut. The subcutaneous tissue is drained. All the wounds have become infected, but none severely, and none has opened widely. The patient is placed in an oxygen tent at 40 per cent concentration for the first twenty-four hours whether it seems to be needed or not. He is thus given both cardiac and respiratory rest.

Fig. 8
Roentgenogram of J. B. approximately one year after primary lobectomy for complicated abscess of the lower lobe of the right lung.

As elsewhere in surgery, if a space can be avoided infection is no real problem. All effort must be directed at rapid complete filling of the pleural space on the operated side. This is accomplished by re-expansion of the remaining lobe or lobes, overdistention of the opposite lung, and drawing over the mediastinum to the

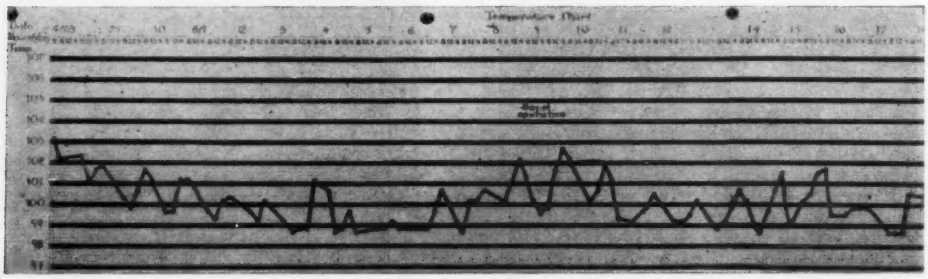

Fig. 9
A portion of the temperature chart of J. B. immediately before and after primary lobectomy for abscess of the lower lobe of the right lung.

operated side. Negative pressure of 3 cm. of mercury applied to the intrapleural drainage tube (*Figs. 2* and *3*) will bring about complete obliteration of the pleural space in about two to three hours.

In order to overcome difficulty in keeping the intrapleural tube free from obstruction and thus assuring complete drainage of the pleural cavity a tube within a modified Brewer tube has been developed (*Fig. 4*). It seems likely the single death noted was directly the result of the failure of drainage from the pleural cavity. The short Brewer tube acts as a cannula in the chest wall through which the intrapleural suc-

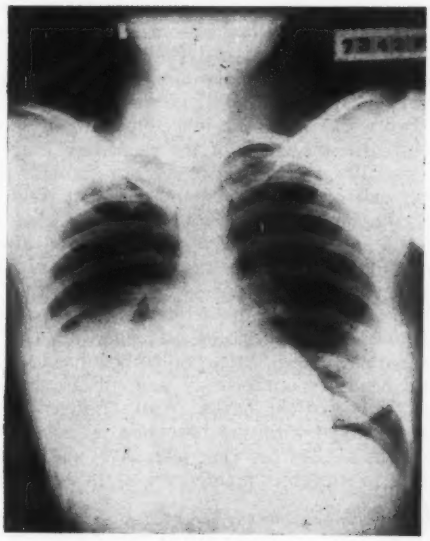

Fig. 10

Roentgenogram of J. H. showing lung abscess in the lower right chest with an extensive area of consolidation. The lower and middle lobes of the right lung were removed. The specimen consisted mostly of necrotic lung tissue with one large abscess cavity and many small abscesses.

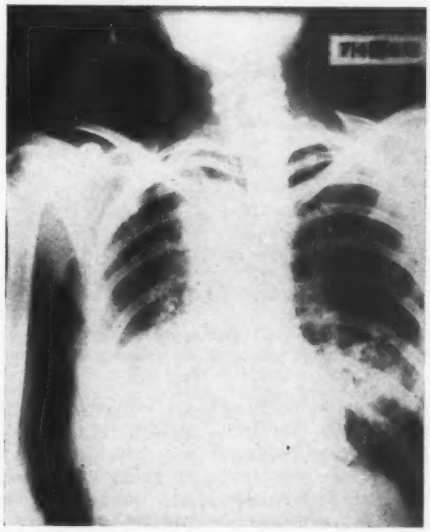

Fig. 11

Roentgenogram of J. H. 21 days after primary lobectomy. The consolidation noted was later proven to be a secondary postoperative lung abscess in the remaining upper lobe of the right lung. This new abscess was drained externally through the upper end of the lobectomy incision.

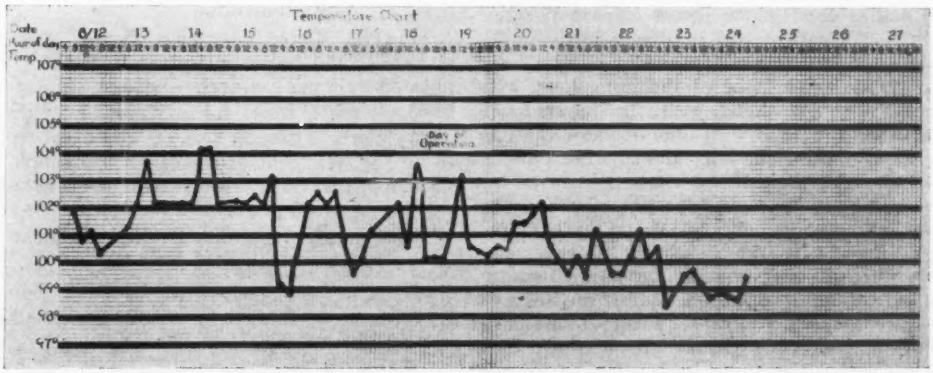

Fig. 12

A portion of the temperature chart of J. H. immediately before and after removal of the lower and middle lobes of the right lung. The patient had high fever for months before operation and again when the secondary postoperative abscess developed in the remaining upper lobe of the right lung.

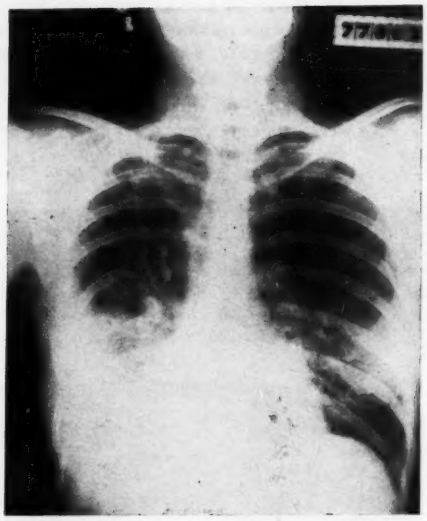

Fig. 13
Roentgenogram of J. H. taken about 4 months after lobectomy.

tion drainage tube can be removed and replaced under sterile conditions at any time with ease and with no discomfort to the patient. Thus one need not guess whether the drainage tube is patent. If need be, the tube may easily be advanced or retracted.

Eight patients with complicated lung abscess (not included in the series of 122 patients studied) were subjected to primary lobectomy. Their ages varied from eighteen to fifty-four years. Three had multiple abscesses involving the lower and middle lobes of the right lung and one of these had a severe case of diabetes mellitus. A patient had an abscess in the lower lobe of the left lung which also involved a portion of the upper lobe of the same lung, and this was excised along with the lower lobe. There was a patient with an abscess of the upper lobe of the right lung and another patient with the upper lobe of the left lung involved by abscess. In this group, a patient who had the lower and middle lobes of the right lung resected did not recover. Technically, it was the most difficult operation of the group because the pericardium formed one wall of the abscess. She probably died because adequate drainage of the pleural space was not accomplished. The patient with diabetes mellitus survived. All but one patient developed a bronchopleurocutaneous fistula on about the fifth to the eighth day, but in no case did the patient experience anything except the spontaneous passage of air through the mouth brought about by the continuous suction apparatus. In no instance did an empyema cavity of more than three ounce capacity develop. The only patient who had a difficult postoperative course developed another lung abscess in the remaining upper lobe of the right lung after resection of both the lower and middle lobes of the right lung (*Figs. 10* to *13*). The original abscesses seemed to be brought about by excessive sedation and it is likely that this secondary abscess resulted from the same cause. The patient was symptom-free for two weeks after the lobectomy. About three weeks after the onset of the secondary abscess external drainage was carried out through the upper end of the original incision. In view of the complication the patient was expected to die and surely would have if the diseased lower and middle lobes had still been present. The drainage tract from this secondary operation is still open three months after the operation. No other secondary operation was done on any of the patients. All bronchopleurocutaneous fistulas healed spontaneously and all are healed now. One patient has a small drainage sinus not connected with the bronchus. Thus, there has been a 12½ per cent mortality, with every reason to expect complete cure of those surviving.

CONCLUSIONS

(1) There seems to be some distinction between lung abscesses which have their origin from colds, pneumonia, and similar conditions and those which are of postoperative origin. The lung abscesses with septicemia are in an entirely separate group.

(2) The simple or uncomplicated (acute) abscess should be distinguished from the complicated (chronic) abscess, but not on a time basis.

(3) Early external surgical drainage seems to be the treatment of choice for the simple or uncomplicated lung abscess and the mortality will be under 10 per cent.

(4) Primary lobectomy is the treatment of choice for the complicated lung abscess.

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DISCUSSION

(Questions and Answers)

Question.—In the case of a simple lung abscess would Dr. Looper advise bronchoscopy before surgical treatment?

Dr. Brantigan.—The question is in case of a simple lung abscess would bronchoscopy be done first? I hesitate to speak for Dr. Looper. I have talked this matter over with him a great many times. I believe, however, that his feeling on the matter is that bronchoscopy is not a definitive treatment. Bronchoscopy is extremely important once an abscess has perforated into the bronchus. It will keep the bronchus free from those secretions which come into it. Removal of the tenacious secretion affords better drainage, but bronchoscopy is not a curative treatment.

Question.—Wouldn't it be better to call it an inhalation abscess rather than a postoperative abscess and how often does it occur after spinal anesthesia?

Dr. Brantigan.—In my personal experience I have not seen one after spinal anesthesia nor have I seen one after local anesthesia, but in the literature many are reported after local anesthesia, particularly after local tonsillectomy.

Dr. Millard F. Arbuckle, St. Louis, Mo.—Some years ago I reported a series of cases of simple lung abscess. I think there were fifty odd cases treated by bronchoscopic treatment plus surgery. Over half of these cases got well with bronchoscopic treatment plus drainage.

On the theory that if a jug is turned with the neck down its contents will run out if the rubber is removed, we treated the simple lung abscess. Some of them were of two or three years' duration. As a rule, of course, we always have a cystoma into the bronchus from the abscess which is filled with granulations, partially blood, if you please, to a greater or less degree. If the granulations are removed with a curette, if they are made to bleed, they apparently undergo a certain degree of atrophy after their blood supply has been disturbed.

If then the jug is turned upside down, in other words, if the patient is made to do postural drainage, keeping in mind the position of the abscess in the lung and the direction in which he must lie in order to turn the bottom of the jug up, about half the simple cases get well with bronchoscopic drainage.

I had a few acute cases. One of them was a medical student who lives in Cincinnati. He had an abscess in the upper lobe, after a gallbladder operation. He got well, I think, with three treatments. Several clinic cases recovered after two or three bronchoscopic treatments.

That has a very great advantage over lobectomy.

Dr. Brantigan.—I hesitate just a bit to make the statement I am about to make because I have the highest respect for Dr. Arbuckle. In treating lung abscess we cannot be satisfied with a fifty per cent cure rate. Neuhof has shown that in simple abscess, the uncomplicated abscess, the acute abscess, if it is treated by external surgical drainage, the mortality will be under ten per cent. Four of his patients died out of 127 with the remaining expected to be entirely well. Now compare that with a fifty per cent cure by bronchoscopy. Certainly bronchoscopy can be used, but is it the thing to do?

On the other hand, for one reason or another patients come to us who have not had the advantage of early drainage, and we find them with a complicated abscess with fibrosis, with bronchiectasis or with irreparable pulmonary damage. In such a case primary lobectomy is the procedure of choice. Such an abscess should not be drained.

In such a series collected from the literature, the mortality is 19 per cent which is a big improvement over 50 per cent. In my little series of only eight patients (it is nine now), only one patient died and the rest are all well. I believe it can be repeated over and over again and I believe that the mortality will even be under 10 per cent.

VITAMIN C IN PERIPHERAL VASCULAR FAILURE*

RESULTS OF RECENT STUDIES

By ELLEN MCDEVITT, A.B.
A. WILBUR DURYEE, M.D.
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Introduction.—As a result of the war tremendous interest has been focused upon traumatic shock. Although this problem was studied in considerable detail before the war, the amount of research in this field has increased many fold in the past two years. With plasma readily available in many parts of the world the incidence of death as a result of traumatic shock has been reduced. However, the entire problem of the related factors present in shock is still not solved. It is the purpose of this paper to report our findings on one of the factors which we believe plays an important part in this condition.

Ungar[1,2] has reported considerable improvement in the life expectancy of animals shocked according to his procedure, if these animals are treated promptly with large doses of the sodium salt of ascorbic acid parenterally. We, therefore, attempted to carry out three experiments designed to confirm his work and to extend the observations of the relationship of vitamin C to peripheral vascular failure. The first experiments utilized normal and scorbutic guinea pigs. The effect of trauma was studied, first in single episodes and then, later, by repeated injuries inflicted over periods of several days. Animals were fed massive doses of vitamin C before trauma and after trauma and the results were noted. The second experiment was the study of the blood plasma vitamin C levels at the time of operation and for five days postoperatively upon patients subjected to rather serious surgery. Finally, the third group of studies was concerned with the estimations of the vitamin C blood plasma levels in normal individuals and patients with peripheral vascular disease.

Methods.—The guinea pig was selected as the experimental animal inasmuch as he is the only common laboratory animal susceptible to vitamin C deficiency. Ungar had likewise used guinea pigs, and, if we were to compare results, we felt that the same animals should be used. Trauma was produced by a method originally described by Noble and Collip,[3] and since then employed by several other workers. The animal is placed in a drum with his paws taped to prevent his running while the experiment is in progress. He is then carried up the side of this rotating cylindrical drum, and falls off the shelf on which he is resting about two-thirds of the way up, thus falling to the bottom of the drum. The method provides a quantitative method of producing shock in guinea pigs or rats with the per cent mortality roughly proportional to the number of revolutions of the drum, all revolutions being at a constant rate.

The guinea pigs were placed on a diet of purina chow. This diet was supplemented by adequate vitamin C intake either from natural sources (such as leafy vegetables) or else by daily feedings of two to three milligrams of crystalline vitamin C from a pipette. Prefeeding of large doses of vitamin C was accomplished by pipette feeding. When vitamin C was given intramuscularly the sodium salt of ascorbic acid was utilized.

Scorbutic animals were prepared by feeding the basic chow diet without added greens or crystalline vitamin C for one month. The purina chow was tested for vitamin C and was free of it.

In order to establish the lethal trauma, the weight of the individual guinea pig had to be taken into consideration: that is, the heavier the pig, the greater the number of revolutions necessary to produce death. Therefore, the guinea pigs in each experiment were paired by weight as far as possible.

RESULTS

(1) *Animal Experiments.—Table 1* summarizes the effect of trauma on normal guinea pigs and scorbutic guinea pigs, and the effect on these animals of massive parenteral doses of vitamin C given immediately after trauma. It is evident from this small group that the pigs on a scorbutic diet succumbed more readily than did those on a normal diet, and the immediate administration of vitamin C as its sodium salt parenterally had no significant effect on the mortality rate of either group. However, in the normal group of pigs, the administration of vita-

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EFFECT OF DIET AND THERAPY ON THE RESPONSE OF GUINEA PIGS TRAUMATIZED IN THE NOBLE-COLLIP DRUM

No. of Animals	Diet	Revolutions	Intramuscular therapy given after trauma	Per cent mortality	Average survival time—min.
12	Normal	207-225	2 c. c. 10 per cent sodium ascorbate (200 mg. vitamin C)	58.3	275
24	Normal*	207-262	2 c. c. normal saline	45.8	70
8	Scorbutic	207-266	2 c. c. normal saline	87.5	130
8	Scorbutic	207-266	2 c. c. 10 per cent sodium ascorbate (200 mg. vitamin C)	87.5	81

*20 animals in this group received maintenance dosage of vitamin C from fresh greens. The remaining 4 did not receive any greens in the diet, but were fed 2 mg. of crystalline l-ascorbic acid OD.

Table 1

min C was able to produce a four fold increase in the survival time of those animals which succumbed (*Chart A*).

Table 2 summarizes the effect of vitamin C administered before trauma. Twelve animals given a total of 12 mg. of vitamin C over a period of six days before trauma showed a mortality rate of 91.7 per cent. Another twelve animals given a much larger dose (more than ten times this amount) over the same period showed a mortality of 82.7 per cent. This difference is not statistically significant. However, again, the survival time of animals receiving the larger dose of vitamin C was more than twice that of those receiving the smaller dose. This difference we consider statistically significant.

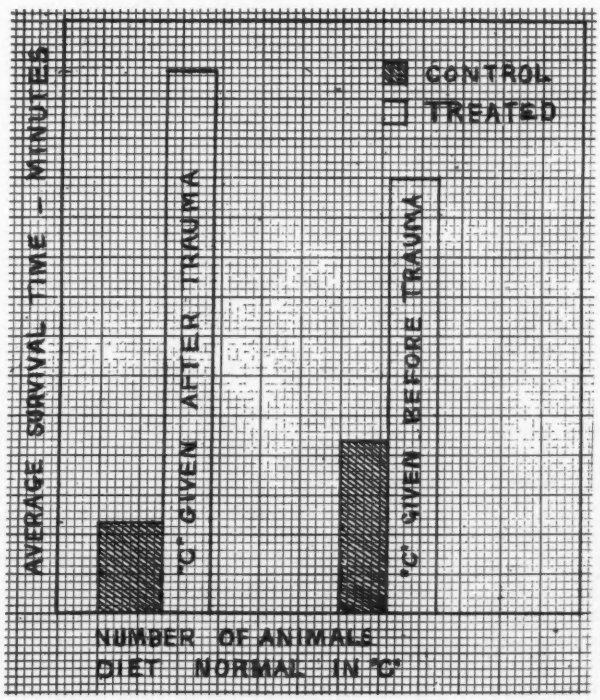

Chart A
Animals treated with parenteral vitamin C before and after trauma showed an increased survival time up to 400 per cent of the controls.

Table 3 gives the results of repeated trauma on animals fed a normal diet, a scorbutic diet, and a high vitamin C diet. All animals on the scorbutic diet died under 300 maximum revolutions, while those on a normal or high vitamin C diet survived up to 440 revolutions. Actually some of them survived even this maximum trauma.

It is possible to cause a great increase in the resistance of guinea pigs by gradually increasing the number of revolutions to which they are subjected. This increase in resistance is far greater than any that has been achieved by the use of any drug. It was felt that the decline in resistance in scorbutic pigs might be reflected to an even greater extent in these animals made resistant by this method. From the table it can be seen that scorbutic pigs were entirely unable to develop in-

EFFECT OF PRE-FEEDING ON THE RESPONSE OF GUINEA PIGS TRAUMATIZED IN THE NOBLE-COLLIP DRUM

No. of Animals	Diet	Daily vitamin C feeding mg.	Intramuscular therapy given before trauma	Total vitamin C mg.	Revolutions	Per Cent mortality	Average survival time—min.
12	Normal	2	2 c. c. normal saline	12	207-270	91.7	87
12	Normal	20	2 c. c. 10 per cent sodium ascorbate (200 mg. vitamin C)	320	207-270	82.7	202

Table 2

COMPARISON OF LEVELS OF RESISTANCE TO TRAUMA IN GUINEA PIGS ON DIETS CONTAINING DIFFERENT QUANTITIES OF VITAMIN C

No. of Animals	Diet	Period of repeated trauma (days)	No. of revolutions producing death	No. of revolutions survived	Average No. revolutions producing death	No. of pigs surviving
4	Normal	58	380 405 405	405	392	1
7	Normal	35	182 207	440	311	5
4	Scorbutic	30	272 300 300		237	0
4	Scorbutic	32	100 100 266 270		184	0
4	High vitamin C (20 mg. daily)	36	309 380	380	329	2

Table 3

creased resistance in this way, while animals given moderate quantities of vitamin C in their diet were able to become quite resistant. Moreover, our studies showed a great decrease in the plasma vitamin C during this process. A final group of animals was therefore treated in this way also, but given in addition 20 mg. of vitamin C per day by mouth. There was no significant alteration in the response from that of the normals.

(2) *Human Studies.*—Eleven surgical patients were studied who were to be subjected to major surgical procedures. A control plasma vitamin C level was obtained before the operation (just before anesthesia was started). A second estimation was obtained about halfway through the surgical procedure, a third about one hour postoperatively, a fourth about 24 hours postoperatively, and a fifth five days postoperatively. Of the eleven cases, only six had a normal plasma vitamin C level preoperatively, and eight of the eleven had a reading markedly below normal either immediately postoperatively or within 24 hours. This drop in the plasma vitamin C level is not due to the anesthesia.[5]

Finally, vitamin C levels were studied in various vascular diseases. We believed that if the circulation in an extremity was subnormal there might be some decrease in the vitamin C level of the circulating blood in the involved extremity. Throughout the patients studied in this group it was apparent that the normal levels of 0.7 to 1.2 mg. per cent were not always necessary for apparent health. Many of the individuals who have been found to have readings of 0.1 to 0.3 mg. per cent show no clinical evidence of scurvy. This information was obtained by one of the authors in an extensive study of plasma vitamin C levels in persons living in Newfoundland.[6,7] Although I have not time to show you the tables of the arterial and venous plasma levels, and of the vitamin C levels of plasma taken from the veins of the upper and lower extremities in individuals with peripheral vascular disease, our findings indicate that there is no essential difference between the arterial and the venous plasma vitamin C level, but that the vitamin C

in the venous blood plasma of people with varicosities is slightly less in the lower extremities than in the upper. We are not yet certain that this difference is significant.

DISCUSSION

The work reported above would lead one to believe that vitamin C plays a definite role in the picture of traumatic shock. It is clearly demonstrated that animals with a low vitamin C intake are more susceptible to traumatic shock than are those on a normal diet. This idea is not new, but it is substantiated by the above experiments. It is likewise apparent that scorbutic animals cannot be made resistant to trauma by conditioning in the manner described. However, animals with a normal or high vitamin C intake become considerably more resistant to trauma by repetition of injury every other day If these data can be transferred from the guinea pig to the human the need of adequate vitamin C intake in soldiers preparing for battle or actually in combat becomes apparent.

Although the results of our experimental work are not in complete agreement with Ungar in that the use of vitamin C immediately after trauma decreases the mortality rate, we do have definite evidence that the survival time of animals given massive parenteral doses of vitamin C after trauma is increased. One might, therefore, suggest the use of added vitamin C in the blood plasma at the time that shock is treated. We have demonstrated that blood plasma supplied by our blood bank contains no vitamin C. Although the plasma is usually adequate to overcome the effects of traumatic shock, it is possible that the addition of a gram of synthetic ascorbic acid would increase the effectiveness of this therapeutic agent.

SUMMARY AND CONCLUSIONS

(1) Scorbutic animals are more susceptible to shock than normal animals.

(2) Repeated trauma in scorbutic animals will not increase resistance to shock to the same degree possible in pigs with normal intake of vitamin C.

(3) Repeated trauma in animals with normal vitamin C intake will increase resistance to traumatic shock.

(4) The use of massive doses of vitamin C immediately following trauma will increase the survival time of animals, but does not lower the mortality rate.

(5) Since the vitamin C level in major surgery diminishes postoperatively, preoperative intravenous vitamin C might be of value in preventing shock.

(6) Further study of the relationship of clinical evidence of low vitamin C and actual blood levels is indicated in peripheral vascular disease.

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THE THERAPEUTIC VALUE OF A THERMOLABILE FACTOR FOUND IN FATS, PARTICULARLY THE LECITHINS, IN DERMATOSES*

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Though we speak in general of fats, carbohydrates, and proteins as if they were single entities, each term represents only classes of protoplasm which are further broken into groups and sub-groups by their constituent parts and by their space chemistry. Much study of the various amino acids has shed light upon protein metabolism, while a similar study of the various sugars and starches has, in turn, led to a better understanding of carbohydrate metabolism. A comprehensive review of the fats by Burr and Barnes[1] shows, too, that there is a marked biological difference in the value of fats, depending on their composition, stereochemistry, melting point, and chemical state.

The effect of processing cereals with the accompanying loss of minerals and the vitamin B complex has received much attention. However, the loss of the important fats in the processing of our vegetable oils and our cereals has not received due consideration. The removal of the fats would appear to be as deleterious as the removal of the water soluble parts of the germ.

Pottenger and Simonsen[6 7 8] and, more recently, Schultz, Gray, and Robinson[9] have pointed out the effect of the heat processing of meat on cats. It is noticeable in every system

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of the body: the vascular tree, the skin, the nervous system, the gastro-intestinal tract, the respiratory tract, the genito-urinary tract (disturbed reproduction), skeletal growth, and manifestations that simulate human allergy.

Though Schultz, Gray, and Robinson[9] believe that meat contains a new vitamin, and though we suggested that possibility in 1939,[6] we have not yet felt certain as to the actual material destroyed. We have found that the heat labile factor is present in all raw meat, but especially in brain, liver, fat, and heart. It is present in high grade raw milk and raw butter from pasture fed cows. But it is not present in appreciable amounts in the raw milk of dry fed cattle. It is apparently present in seeds, sprouts of all kinds, and in rapidly growing young green grasses.

The best vegetable source commercially available that we have found is the solvent-processed soybean lecithin* in which the heat of processing is not excessive. The factor is largely destroyed when milk or cream is pasteurized, when meat is cooked, or when soybean lecithin has been produced by methods using high heats.

The factor is readily destroyed by all processes of canning and pasteurizing and by most methods of crushing or grinding seeds and cereals, as the temperatures evolved in these processes usually run from 150° F. to 250° F. or more. It is also removed from our food by the usual procedures of clarifying and refining.

Our experimental work suggested that a variety of clinical conditions might be benefited by the application of the principles learned in our research. It suggests that the effect is vasomotor to a large degree. Our results with allergies, sterility, low energy, development of the face, and nervous and mental disorders have been encouraging. In this communication, however, we wish to stress the effect of the treatment on skin lesions.

We have been carefully investigating habits of diet of the patients, especially with reference to the preparation of the proteins and fats. In this group of patients who show allergies and skin lesions, it is surprising to find how few actually consume any appreciable amount of fat; and when fat is consumed to any degree, it is either a purified vegetable fat or is meat fat that has been subjected to very high heat. There seems to be a prevailing opinion among the patients we see that there is something undesirable in meat fats. Likewise, we have found that most of our patients prefer their meats well done. In gathering facts on the infantile eczemas, with which we have had our most extensive experience, we note that the mother usually expresses a dislike for fats and may say that she never eats butter or cream and avoids all other forms of fat in order to preserve her figure. Two infants kept by Von Groer[10] on a very low fat diet grew fairly well, but one developed a generalized eczema. Of three infants maintained on a fat-free diet by Holt and co-workers,[4] one developed an eczema which was cured by feeding fat.

*We are grateful to the American Lecithin Company of Elmhurst, Long Island, for clinical material.

GENERAL THERAPEUTIC METHODS

All patients have received a high protein diet with the liberal use of raw brain and liver. The use of the raw beef sandwich and sprouted seeds as salad has been encouraged. In the last six months, as difficulties in obtaining meat have arisen, we have supplemented the meat diet with the use of the soybean lecithin. Each patient reported here received a daily ration of either 3 ounces of raw brain and 1½ to 3 ounces of raw liver, or from 6 to 18 grams of soybean lecithin when mentioned. The report below is based on clinical experience over the past ten years.

CONDITIONS OBSERVED

(1) *Keratoses.*—The keratoses on the dorsum of the arms, thighs, and buttocks have long been ascribed to the lack of vitamin A in the diet. This condition usually clears in from two to six weeks. However, there are many stubborn cases that take over a year; usually they are those showing the bronzing of the skin described below.

(2) *Bronzing.*—There is a bronze cast to many skins that differs from sun tan. Individuals showing this bronzing of the skin acquire a deeper tanning from exposure to the sun than does the average individual. Further, the sun tan in these individuals disappears more slowly than it does in the average person. It is frequently associated with a markedly purplish discoloration (vasomotor in nature) of the skin of the extremities in dependency. As a rule, these two changes of color respond to treatment with about equal rapidity. It is not apparent whether the vasomotor disturbance is responsible for the bronzing of the skin, or whether the latter condition represents a disturbance that is responsible for the vasomotor change. We see some patients who present the bronzing with-

out any evidence of vasomotor disturbance of the skin, while many more with marked purplishness do not present the bronzing. This bronzing is not associated with other metabolic disturbances in which bronzing is found, such as pellagra and diabetes, but seems rather to indicate disturbance in fat metabolism. Likewise, the purplishness of dependency seems to be a strictly vasomotor phenomenon, independent of any evidence of cardiac disturbance. We have noted that people who present bronzing are usually refractory to treatment, are of low energy, are frequently very irritable, do not "feel well," and are sometimes sterile. These pigmentary changes may or may not be accompanied by other skin disturbances. However, when skin lesions are present, the most common are the keratoses about the buttocks, thighs, and dorsa of the arms; occasionally the skin is very dry, and icthyosis of the legs may be found. The bronzing is present not only in the skin but may be seen in the hair. Frequently its disappearance in the emerging hair is accomplished long before depigmentation of the skin is visible.

A woman, aged 42, was first seen on January 8, 1943. The patient had been a chronic invalid for many years. She has experienced great difficulty in reproduction, was of a low energy level and highly unstable.

She showed some pigmentation about the face and a bronze cast to the skin over the entire body. There were numerous flat moles over her body. The hair was very dry and also possessed the bronze cast. The tongue showed some edema. There was a yellowish cast to the vault of the mouth. The patient showed marked hyperchromia about the nipples, almost as deep as one would expect with a pregnancy. There was considerable edema to all of her skin, which was very thick over the entire body and possessed a peculiar odor. She showed markedly increased hyperchromia about the anus, a deep bronze surrounded by a zone of yellowish discoloration. There were many comedones about the anus. Keratoses were present on both arms and thighs.

On February 27, 1943, the patient's skin was becoming soft, and she was losing the keratotic lesions on the arms and upper thighs.

By October 12, 1943, she had begun to lose the facial bronzing about the eyes, giving her a harlequin-like appearance.

(3) *Infantile Eczema.*—Infantile eczema has become so common today that it is almost taken as a normal part of the growth and development of a child. It is frequently passed off as unimportant, and the mother is assured that the infant will outgrow it. It is common to the bottle-fed baby and almost equally so to the nursed infant. Representative of the former type is the following case history:

A boy, aged 17 months, was first seen on October 2, 1943. The mother said that she did not like fat or fat meat and ate very little butter. She lost her first infant, aborting at 3 months, and vomited severely during the first three months of the pregnancy with this child. The patient was nursed two days. Much difficulty was experienced in adjusting his formula. At 8 weeks of age, scales were noticed by the mother throughout his scalp. A rash beginning on the face was noted at 4 months of age. A diagnosis of eczema was made. From then on there were periods of exacerbation. The child had apparently been shown to be sensitive to orange juice, wheat, eggs, spinach, and peas. He was a mouth-breather.

Examination showed large areas of the body to be involved with eczematous lesions excoriated by scratching, particularly the frontal bosses and lateral aspects of the cheek extending down over the zygomas. There was a large patch running between the superciliary ridges and the external auditory canal on both sides. The upper lip and nose were relatively free. There was a great deal of elephantine-like skin about the neck. The skin was very heavy and thickened in both axillary folds, but they showed no apparent eczema. There were eczematous lesions in the elbow creases, about the forearm, on the dorsum of the hands, and between the thumbs and first fingers. There were cracks on the thumbs, particularly severe on the left. Lesions over the entire abdomen, geographic in character, extended up over the thorax anteriorly. In this area were many old, excoriated scars but few fresh lesions. There were large eczematous areas posteriorly, on the left buttock. A large rosette of lesions about the anus extended into both gluteal folds. Lesions about the knees and on the upper legs were more extensive on the upper left leg than on the upper right. There were excessive fat pads over the lower legs. Some eczema and marked excoriation were present in the external auditory canals on both sides. Both the scrotum and the penis were involved in the eczematous processes, and the scrotum was markedly thickened. The penis was thickened and indurated.

By November 2, 1943, with the exception of the cheeks and face, which the child rubbed on his sheets, the eczematous lesions had largely disappeared. The thickened, indurated character of the skin of the neck, folds of the buttocks, creases of the elbows, and about the penis and scrotum had largely disappeared.

It is our impression that infantile eczema in the nursed infant represents a heat labile factor deficiency in the mother. A brief resume of a case history shows the following:

A girl, aged 7 weeks, was first seen September 16, 1943. The mother had previously given birth to a very severely eczematous child. She herself was showing extreme bronzing of the skin. She brought her second infant for examination, saying that the baby was beginning to show the same eczematoid tendencies that had been crippling to the older child.

Examination of the baby showed definite evidence of improper fat metabolism. She was irritable. She lacked proper fat pads of the axillae, thighs, and suck-

ing pads of the cheeks. There was an inflamed, papular eczema about the face, upper chest, and buttocks, and a seborrhea was seen throughout the scalp. The mother, who was nursing the child, was placed on a combination of brain, liver, and soybean lecithin.

By October 4, 1943, proper fat distribution was apparent throughout the subcutaneous areas. The child showed only a slight scaliness over the scalp and about the eyes. Tissue turgor had entirely changed. The mother had lost the bronze pigmentation of her skin.

(4) *Severe Eczema.*—Extreme eczematoid lesions which cover the entire body, not only in infants but in adults and adolescents, respond gradually. Oftentimes in these individuals there are marked sensitivities which cannot be overcome. It is therefore necessary to use restricted dietaries with these patients. Our experience has not shown any of these individuals to be sensitive to raw beef, beef liver, or beef brain. However, lamb produced sensitivity relatively rapidly in one individual. One of the most difficult and profound of these eczemas was an infant of 18 months who, at the time of examination, appeared almost as though she had a pemphigus. The child was edematous. There were large bullae of the skin, which had ruptured, and many areas of skin were exposed in sheets. The child could scarcely open her eyes. During a three and a half year period her diet has been confined almost entirely to raw beef, liver, and brain, with very few other foods added. Each time other foods have been tried, the patient has become sensitive to them in a relatively short period of time.

However, our usual treatment disregards sensitivity. The following case is typical:

A girl, aged 17, was first seen on August 6, 1942. The patient was a premature infant at 6½ months, weight 3 pounds. She was not nursed. There was a great deal of difficulty during the first 2 months of life. Her health as a child was fair. At 2 years of age she developed severe eczema, and she developed asthma at 4 or 5. The childhood eczema was finally relieved by the elimination of orange juice, spinach, and cow's milk. Only mild eczema and asthma occurred spasmodically until the age of 12. Between the ages of 12 and 15 she was apparently free from both. Just before her fifteenth birthday, eczema began to appear in the hands and armpits and back of the knees. During the spring semester following her birthday, it became noticeable to her companions, and she became very self-conscious. She began to lose sleep because of the itching. School work became very difficult for her. Friction at home also produced a restless, unsettled mental condition. During the summer of 1941 she became very unhappy because of her condition and dreaded going back to school. In August, 1941, x-ray treatment partially cleared her skin for a short period of time. She went to the beach to complete the cure on the advice of a dermatologist, but the condition became steadily worse and the lesions spread to the neck. When she went home in September, the condition became acute with loss of sleep. The eczema spread to her arms. At that time, the patient was hospitalized for 3 weeks. Many medications were applied to her skin, but the only relief obtained was by the use of crude petroleum with starch and zinc ointment. At the hospital she was placed on a diet of lamb and chicken, ry-krisp, certain vegetables and fruits; milk, milk products, wheat, and eggs were eliminated. She went home in October and her condition became more acute than before. There was a marked loss of sleep. Tar gave relief for a few days, but the condition again became more acute than ever. By this time the lesions covered the entire body. The diet established in the hospital was continued. In November of the same year she went to the mountains for a change of environment and then entered another hospital. Sedatives were given without effect. The patient was sleeping only 2 to 4 hours. Short baths gave her some relief. She remained in the hospital until December 12. She proved sensitive to many sedatives. Scratch tests showed her to be sensitive to karaya gum; injection tests showed sensitivity to dog and cat hair. Rides, excitement, or fatigue of any sort bothered her greatly. The skin had been kept greased for several months. She could not stand the touch of clothing. During this period she had been seen by many physicians.

At the time of examination, August, 1942, there was a bran-like desquamation of the entire epidermal surface from the soles of the feet to the scalp. Areas over the entire body showed evidence of mechanical abrasion, excepting over the abdomen and between the shoulder blades. The skin was very dense and thick over the entire body. The nearest normal skin was on the abdominal wall and the upper thigh, from about 2 inches below the inguinal ligaments to just above the umbilicus. The entire body was hot. The patient was unable to straighten either her arms or legs, because of adenopathy. There was complete exfoliation of the skin of the external auditory canals. It was difficult to see the drum membrane. The eyebrows were missing. There was purplish discoloration at the junction between the hard and soft palates and marked swelling of the buccal membranes, which showed a yellowish cast. The labia were very edematous.

The patient began to show improvement relatively quickly. Although she gave a history of having received sedatives almost continuously prior to her admission to our hospital, we did not find it necessary to administer them except on a rare occasion. By February, 1943, there was a marked change in her disposition, and the skin, instead of showing a hard, gray, bran-like surface, had become more pliable and a fiery red. The periodic temperatures of 100° to 102°, which the patient had been running, were gradually subsiding, so that by February only occasionally did she have any fever. It was not until August, 1943, that she began to sweat normally. At that time her general condition had improved to such a degree that she was discharged as an in-patient. Most of the skin over her back and abdomen was relatively normal. There was still some thickening in the neck and a sclerodermatitis-like condition of the face.

On November 1, 1943, her skin was practically normal except that the skin of the neck was still weeping occasionally when it became warm and the skin of the face was a little thickened. She is now able to

sweat normally except on the face and neck. The eyebrows have not yet returned.

There has been a marked change in the personality of the individual during the period that I have known her. She has changed from a person afraid to face life to a happy, normal girl, living and acting as any 18 year old girl should. From an individual whose school record had always been questionable, she has become one of the superior members of her class. Though she still has a few patches to scratch when she is nervous, the skin is largely free.

(5) *Scleroderma.*—Scleroderma, which has been noted in conjunction with arthritis and other conditions, responds relatively quickly. Here, the glazed, lifeless, easily broken skin soon becomes soft and normal, especially in the elderly patient. The addition of physiotherapy, particularly hydrotherapy in the form of hot applications and baths, is highly beneficial.

A boy, aged 10, was first seen on August 11, 1942. The patient was suffering from Still's disease but presented cutaneous lesions.

There was a marked thickening, drawing, and pulling of all the skin of the face. It was firm, mask-like, and devoid of expression. Every movement appeared to be painful. The skin over the hands was tightly drawn and shiny, particularly over the joints. There were keratotic lesions over the lateral aspects of the posterior portion of both hands and about the thumbs. The skin over the entire body was shiny and lacked life.

Until June, 1943, this patient was treated with our usual special diet without the addition of the raw brain. During this time he made some very satisfactory progress in his general problem, but his skin was still similar to what it had been before treatment began. Inasmuch as raw brain had yielded most gratifying results with some older patients who had presented both arthritis and skin lesions, we decided to give this boy 3 ounces of brain daily because of the arthritic condition alone. His response was rapid in both conditions. The skin began to regain its normal appearance and lost its shininess. It became soft and lost the bound down appearance formerly noted. The extremities, which had always been cold before, began to show an increase in temperature. Marked improvement in the general circulation of his extremities was noted very promptly. By November, 1943, the glassy appearance had gone.

(6) *Psoriasis.*—In our experience, the use of the raw brain and liver with the high protein diet has been an effective aid in treating psoriasis. It must be remembered that in treating such a condition, one is treating a generalized metabolic disturbance and not merely the skin. The response of these patients is most interesting. It is characterized by remission, exacerbation and progression; but the general progress of the treated cases seems to be one of satisfactory and consistent healing. The use of the soybean lecithin has been described by Goldman[2] and others. We treated the case of psoriasis described below as we treated the other skin conditions under discussion.

A woman, aged 63, was first seen October 1, 1943. The psoriasis was of 8 months' duration. The patient appeared to be 80. She had had some arthritis since 1932 and had been deaf for 35 years. The patient gave a history of preferring her meat well done. She said that she did not like fat and ate very little butter. Her muscular strength was poor. She developed psoriasis in February, 1943, at the same time that she contracted a severe cough. She has had periodic exacerbation of temperature. A rash had broken out over the face and back. She complained of colitis and anemia.

Examination of the skin revealed some epidermophytosis over the feet. There was much wasting of the tissues about the buttocks and a fine-grained rash over the entire body. The skin was very dry. There was a collar of dry epidermis down to the manubrium and red areas over the shoulders. The skin over the face was scaly, dry, and painful to the patient. There was a nearly total loss of the eyebrows. The scalp was extremely dry, dirty, scaling, and showed yellowish coloration. There were flattened keratotic areas of from 2 or 3 mm. to as much as a square centimeter over the lateral aspect of both arms. There were similar areas over the dorsum of the thumb and on the mesial surface of the little finger of the left hand. There was a Dupuytren's contracture of the left palmar fascia. There was an area on the mesial surface of the fourth digit of the left hand from an electrical burn, which had been a running sore for 12 years. There was considerable loss of the interosseous muscles and subcutaneous tissue. There was a round, erythematous lesion in the pulp of the second finger of the right hand. Around the anus was the same type of reddened lesion. A leukoplakia-like lesion in the perineal fold extended up and involved the lower portion of the labia minora. There was a marked wasting of the vermilion of the lips and a reddened, inflamed, edematous lesion in the vault of the mouth. She showed a geographic tongue. She was placed on the diet plus raw brain and liver 3 ounces a day.

On November 1, 1943, for the first time in 12 years the skin had completely grown over the burn on the little finger of the left hand. The keratotic lesions on the lateral aspect of the arms seem to be disappearing. The patient was feeling materially better. The skin was not quite so dry as before and was beginning to get a soft feeling. The pain had left the face. The dry, scaly condition existing over her body as a whole had largely disappeared, though it was still present on the face. The scalp showed some signs of natural oil.

(7) *Atrophy.*—Much improvement is noted in the senile atrophies of the skin.

A man, aged 76, complained of extreme dryness of the skin over the dorsum of the hand and loss of subcutaneous tissue.

Examination revealed paper thinness, generalized bronzing, and low, flattened, irregular keratotic areas. The patient said that the condition had developed during the year and a half before, particularly since

the advent of meat rationing. He had formerly been a heavy consumer of meat products and fat, and he had always liked his meat rare. Coincident with meat rationing, he had been put on a diet quite low in calories and fats because of a diverticulitis.

The patient was given 9 grams of soybean lecithin daily over a period of six weeks, and his usual diet was resumed. The skin showed evidence of filling out and being softer. The keratoses were becoming smaller, and the bronze pigmentation lessening.

(8) *Seborrhea, Keloid, Acne.*—Most of the cases of seborrhea that have come under my observation have been associated with acne. It has been very interesting to note that the seborrheas respond well to treatment, showing generalized softening of the skin and lessening of the oily excretion. On the other hand, although we have seen apparent beneficial effects with cutaneous infection, the acne proper does not respond as well as the seborrhea. Extensive keloid formations, due to burns, severe acne, and cuts, which we had formerly treated with thyroid, are found to respond very quickly to these dietary changes.

A boy, aged 15, was first seen October 16, 1942. Major problems were a failure in development of the face, extremely low energy, exhaustion, seborrhea of the scalp and face, acne, and keloid. At 20 months of age he had received a first, second, and third degree burn over the precordium, and the left side of the face and abdomen.

There was a large appendical scar with keloid formation, elevated approximately ¼ inch, about 1 inch in breadth and 2½ inches long. On standing there was a marked increase in purplish discoloration of his lower extremities extending up to the upper third of the thighs. It was also apparent over the distal portion of his upper extremities. He showed a marked mottling of the skin over the entire body. On standing for 20 minutes the purplishness increased and extended as high as the umbilicus. There was marked evidence of disturbance in the circulation of the lower extremities. There was a 5-inch scar on the dorsal lateral surface of the arm extending from the head of the radius down. Just mesial to the pap on the left was a scar 1 inch broad and 1¼ inches long. There was a marked keloid tendency below this area, and mesial to it was another scar about 1 inch long. There was a similar scar in the region of the xiphoid, also due to the burns of childhood. Mild acne showed over the face, particularly over the forehead, and there was a fine, silvery scale about the eyebrows.

On May 15, 1943, the acne showed a decided improvement and the skin was beginning to lose its oiliness. The keloid was lessening.

By October 16, 1943, the scars had practically disappeared. All elevation of the appendical scar had disappeared. The acne continued to a slight degree, but was not marked.

CONCLUSION

We have found experimentally that in the heat processing of food for animals (cats and rats), certain factors that are essential to the proper maintenance of skin tone, vascular tone, reproduction, development of the bones, maintenance of the natural form, and the prevention of allergic manifestations are destroyed. Furthermore, we have found that by avoiding the destructive effects of heat in the preparation of food, we have been able to relieve many clinical manifestations. In this communication we are reporting only the effects on the skin.

The factors destroyed apparently occur in all raw meats, particularly in the fats, but they are especially useful as found in brain, liver, and heart muscle. Vegetable lecithins that have not been exposed to high temperatures of processing have also proven useful. These factors are lacking in fats and oils which have been subjected to high heat in processing and are not found in therapeutic amounts in pasteurized milk or in butter from pasteurized cream. Although we are reporting the action of these factors upon the skin only, they affect the entire metabolism of the individual.

The therapeutic effects of the heat-labile factors found in the lecithin-rich foods have proven valuable in the treatment of keratoses, a bronzing of the skin which seems to be indicative of fat deficiency, infantile eczema, the more severe types of eczema, scleroderma, senile atrophy of the skin, seborrheas, acne and keloid formations.

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EXPERIENCES WITH THE PHOTOROENTGEN METHOD IN CHEST SURVEYS*

ANALYSIS OF 100,000 EXAMINATIONS

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The value of mass roentgen surveys of chests has been adequately substantiated so that it is not surprising that it became army policy to x-ray as many men entering service as facilities would permit.

There are four methods of detecting pulmonary disease, to-wit: fluoroscopy, 14x17 standard films, 14x17 inch paper films and the photoroentgen method. The first is not very accurate and has one drawback, the lack of a permanent record. The large films have several disadvantages. They are cumbersome to send to other examining boards for purposes of comparison, the storage problem is an enormous one and they do not lend themselves to inclusion with the soldier's clinical record.

The army has installed photoroentgen units wherever conditions warrant it, using 4x5 inch stereoscopic films while in the navy 35 mm. roll film is standard. The army film cost is about ten cents, the navy three. Our technicians can examine about 200-250 men per hour, the rate of reading is about 150-200 per hour.

The equipment consists of a 200 ma. x-ray unit with two tubes with stationary anodes mounted on a single tube stand. The tubes are alternated every twenty-five men, (50 exposures). Tube life has been variable, from 3,000 to 48,000 exposures, the average about 25,000. The photoroentgen unit consists of a light proof box with a 14x17 inch fluoroscopic screen backed by a lead glass shield at the larger end. At the smaller end is a lens (F. 1.5) and behind it is a film holder containing a 4x10 inch film.

When an exposure is made, an image appears on the fluoroscopic screen. This is reduced by the lens and a photographic impression is made on the film. The lead glass absorbs all the x-rays passing through the screen. The tube and film are shifted and a second exposure made. All lesions discovered on the small film are checked with large films. If the lesion is considered significant, the patient is referred to the hospital for study.

The men examined here for air crew training are 18 to 26 years of age. These men have been in the army for varying periods, some as long as two and one-half years. While the first few thousand did not have a high percentage of induction films, the last third have practically all been examined before arriving here for classification. This is well exemplified in previous papers,[1,2] there having been a steady decline in the incidence of pulmonary tuberculosis. The first 32,000 had a percentage incidence of 0.207, the second 32,000, 0.169 and the third 0.120. Indeed, the last 10,000 examined have had an incidence below 0.05 per cent. This is in sharp contrast to the incidence in the general population (inductees) of about one per cent (Ashbury[3]).

Our experience with this method of diagnosis was nil, but it is our opinion that any trained radiologist will find little difficulty in attaining a high diagnostic accuracy after reading several hundred films. As a matter of fact, we would prefer to have a stereoscopic pair of 4x5 inch films rather than a single 14x17 inch film as a small lesion is often obscured by a rib.

DISCUSSION

Tuberculosis.—Most of the cases discovered were minimal lesions, a stage where the patient had no clinical symptoms when studied in the hospital. The fact that the incidence found here is now less than 0.10 per cent and decreasing, more than substantiates the value of army policy in regard to chest surveys.

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*Read in Section on Radiology, Southern Medical Association, Thirty-Seventh Annual Meeting, Cincinnati, Ohio, November 16-18, 1943.

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FINDINGS IN 100,000 CHEST EXAMINATIONS

	No.	Per cent
Non-tuberculous Lesions		
Pneumonia	331	0.331
Bronchiectasis (proven by bronchogram)	28	0.028
Emphysema or lung cyst	4	0.004
Mediastinal adenopathy	12	0.012
Lung abscess	2	0.002
Pneumothorax	1	0.001
Tuberculous Lesions		
Miliary calcifications	35	0.035
Inactive non-calcified lesions, probably tuberculous	40	0.040
Minimal tuberculosis	112	0.112
Moderately advanced tuberculosis	10	0.010
Far advanced tuberculosis	2	0.002
Totals		
Non-tuberculous lesions	378	0.378
Tuberculous lesions (excluding miliary tuberculosis)	164	0.164

Table 1

Pneumonias.—The high incidence of pneumonitis (0.331 per cent) in men going through the examining line was quite surprising. Most of these men had only slight or no symptoms at all when examined in the hospital. It was difficult to determine the etiology, but our studies would indicate that these were principally cases of residual atypical pneumonia of unknown etiology.

Bronchiectasis.—The large number of bronchiectatic cases (28) was also of interest. A detailed study of these men is being made, but it was found that most of them had lost little time during their army career on account of sickness. Practically all had had induction x-rays. Findings on the plain film varied; noted were increased peribronchial markings with or without ringlike shadows, infiltrations, nodular in appearance, persisting for from five to six weeks, after which a bronchogram was made. Twenty men denied symptoms, but follow-up questionnaires, after they were discharged from the service, revealed that all who answered (thirteen out of twenty sent) had cough and expectoration. One died of brain abscess and empyema. It will be of interest to follow up these men in civilian life.

FINDINGS IN 68,000 EXAMINATIONS*

	No.	Per cent
(A) Bifid ribs	373	0.549
Cervical ribs	46	0.067
Rudimentary ribs	68	0.10
Synostosis of ribs	150	0.22
Rib tumor	3	0.004
Azygos lobe	153	0.375
(B) Parenchymal calcifications	1725	2.38
Hilar calcifications	3072	4.50
Combined hilar and parenchymal calcifications	799	1.17

*Note: In the 32,000 men no record was kept of abnormal rib findings, azygos lobes and calcifications except disqualifying ones. This accounts for the number, 68,000.

Table 2

CONCLUSION

(1) In a survey of 100,000 chest examinations the percentage incidence of tuberculous lesions was 0.164.

(2) This low figure is due to the fact that the majority of the men have already had chest x-rays before coming here.

(3) There was a large number (331) of pneumonitis, with little or no symptoms.

(4) Twenty-eight cases of bronchiectasis were encountered.

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DISCUSSION (*Abstract*)

Dr. Robt. J. Reeves, Durham, N. C.—The problem is coming up all over the country as to what type of film should be used now and after the war. Two years ago we had a discussion here in Cincinnati on the use of various size films and I think it was the consensus of opinion that the paper film was out completely, the 35 mm. coming next, and that the 4x5 stereoscopic film was the most important. It is equal in value to a single 14x17. We can see things on the 4x5 stereo that we can also see on a single 14x17, but it is much more distinctly seen in the large stereoscopic. The 4x6 stereo seems to be a happy medium.

SYPHILIS CONTROL IN WAR TIME*

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Realistic wartime venereal disease control requires a two-front attack. The wartime tendency toward a sharp increase in commercialized extra-marital sex activity must be opposed. This may be termed social control. Simultaneously, medical control must be intensified; individuals in the infectious stages of the disease must be located and placed under treatment as soon as possible and kept under treatment until beyond the likelihood of infectious relapse.

Secondary, but highly important measures which are both social and medical, and closely related, must also be applied. These are public education and prophylaxis.

Syphilis control in the United States today is based on these elements of social, medical and collateral efforts. Its effectiveness depends on the understanding, cooperation and ability of private physicians, health officers, local law enforcement officials and other governmental and private agencies who are involved in its application. At stake is the maximum efficiency of our armed forces and industrial workers and the health of the total population.

Extent of the Problem.—As with any communicable disease, syphilis control must begin with locating areas and individual foci of infection. Serologic tests for syphilis performed on men called up for examination under the currently operating draft law provided one of the best opportunities for current knowledge of the extent and location of the syphilis problem in this nation. From the first 2,000,000 examinations we were able to obtain preliminary information as to the seriousness of the total problem and of its components. This in turn allowed for the application of maximum effort in those geographic and social areas where the problem was most acute.

We learned that in the first 2 million men examined, 47.7 in every thousand, aged 21-35, had evidence of infection; that among negro men the rate was 272 per thousand, and 23.5 among white men. We learned that the combined white and Negro rate in the southern portion of the country was more than four times that of the northern.

At the beginning of intensive preparation for the oncoming war the best estimates indicated the total prevalence might be as high as 3,200,000 cases of syphilis in the country. The attack rate could not be determined for all classes of the population, but in the Army the annual rate in 1940 was 7.31 per thousand. Among the total population it was estimated by Vonderlehr and Usilton that the 1940-41 prevalence rate for white males in the 21-25 age group was 10 per thousand. The Selective Service rate for the same group was 10.1. These same authors estimated that in the whole population the individual chance of acquiring syphilis by age 50, at rates existing in 1940-41, was 1 in 15. Comparison with a similar estimate for 1936-37 when the "chance" was given at one in ten, led them to state that "this decline was undoubtedly due to the greatly accelerated preventive and control program, which had attained its full stride by 1941."[2]

It is well founded in the history of venereal disease that war brings marked increase among the military forces. Colonel Siler says in his history of U. S. Army Venereal Disease Control:[3]

"Invariably the Army rates have increased during periods of mobilization for war and during the initial stages of war."

U. S. Navy rates have followed a similar

Syphilis rates per thousand white and Negro men aged 21-35 in United States, based on 1,895,778 selectee serologic reports by U. S. Census division and region.

U. S. Census Division	*White*	*Negro*	*Total*
East South Central	34.6	277.2	109.5
South Atlantic	36.8	296.1	102.9
West South Central	45.4	307.1	91.9
Mountain	26.4	270.8	28.9
Pacific	24.7	210.6	27.8
East North Central	19.7	204.6	27.1
Middle Atlantic	15.2	194.2	23.4
West North Central	17.1	222.3	22.2
New England	10.7	146.2	12.2
Region			
15 Southern States and District of Columbia	39.5	294.0	100.5
29 Northern States	17.9	201.4	24.0
Total			
44 States and District of Columbia	23.5	272.0	47.7

Table 1

*Read in Section on Dermatology and Syphilology, Southern Medical Association, Thirty-Seventh Annual Meeting, Cincinnati, Ohio, November 16-18, 1943.

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Syphilis prevalence rate per thousand among 1,895,778 selectees and volunteers by age group, race, and residence.

Age Group	*Urban*	*Rural*	*Total*
		White	
21-25	9.9	10.5	10.1
26-30	21.1	20.5	20.9
31-35	39.3	34.5	37.7
Total	17.8	16.5	17.4
		Negro	
21-25	204.1	175.7	191.2
26-30	303.1	276.6	293.7
31-35	360.5	349.0	357.2
Total	269.3	226.3	252.3
		Total	
21-25	28.8	32.2	30.1
26-30	55.2	52.8	54.4
31-35	86.8	75.6	83.2
Total	46.1	43.8	45.3

Table 2

course. British, French and German army and navy experience is the same. In the current conflict, Great Britain has reported a 70 per cent military venereal disease increase and an increase of 40 per cent in civilian rates. Even the neutral Scandinavian countries suffered a great increase during World War I.[4] Reliable data on civilian rates are not available, but it is axiomatic that the unsettled conditions of war furnish an ideal environment for the spread of all venereal diseases among civilians.

Subsequently, in this report evidence will be presented to justify the belief that the national program begun in 1938, and intensified since American participation in the war, has so far enabled this nation to avoid a substantial increase in syphilis among both the civilian and military populations.

Control Strengthened.—There were 1,122 public clinics in the United States at the end of the fiscal year 1938. The total had risen to 2,633 in 1940, and 3,700 in 1943. Correspondingly, syphilis admissions in these clinics were 150,000, 289,000, and 430,000. Doses of arsenical drugs distributed annually through health departments and by private physicians increased from 2,800,000 in 1938 to 6,700,000 in 1940, and 10,800,000 in 1943. Federal, state and local budgets for venereal disease control rose from $6,730,000 in 1939* to $10,700,000 in 1940, and $18,000,000 in 1943.

Not only on the medical front have defenses been strengthened. The social control program, already described as one of the two wartime control essentials, has received official attention. In 1939, the War and Navy Departments, the Federal Security Agency, of which the Public Health Service is part, and the state health departments adopted and placed in operation an eight-point agreement which includes social control measures to be undertaken in areas where armed forces or industrial workers are concentrated. Responsibilities for developing the national program of social control through repression of prostitution and sexual promiscuity was placed in the hands of a new bureau, the Social Protection Division of the Federal Security Agency. Venereal disease public education has been increased tremendously by all organizations participating in the program.

Epidemiology.—A distinguished colleague, Dr. John H. Stokes, recently pointed out the necessity of an everlasting need for "following on foot, if necessary, the individual spreader of venereal disease." According to Stokes, the epidemiologic tracing of venereal disease infection has

> "become probably the most important single, though as yet least developed, instrument of aggressive venereal disease control."[5]

The most revolutionary advances in syphilis treatment will not materially aid in actual control unless we are able to uncover and bring to the physician or clinic a majority of the infected.

In the 1943 fiscal year, physicians, selective service boards, clinics and other agencies reported to state health departments nearly 600,000 cases of syphilis, the largest number by at least 100,000 in the history of syphilis control in this nation. If determined and resourceful epidemiologic workers were put to work on each of these reported cases an enormous number of unreported contacts would surely be found.

It is gratifying to be able to report definite progress. Not many years ago only a few health departments really practiced syphilis epidemiology. Today there are at least 8,000 health department employees engaged in full-time or part-time venereal disease epidemiology. These workers, nurses and especially trained laymen,

*No Federal appropriation for 1938, and no reliable State fiscal data.

Distribution of 8,638 known places of procurement or encounter, non-familial venereal disease contacts, 3rd Service Command, March, 1942, to June, 1943.

Place	*Number*	*Per Cent of Total*
Bus or R. R. depot	209	2.4
Hotel	230	2.7
Cab	24	0.3
Street	2,084	24.1
Tavern or restaurant	3,258	37.7
Dance hall	343	4.0
Home or apartment	1,346	15.6
Other	1,144	13.2
Total	8,638	100.0

(From Norris, Doyle and Iskrant)

Table 3

provide service to more than 20,000 private physicians and nearly 4,000 clinics and other institutions.

A great epidemiologic opportunity for syphilis control is provided by the selective service serologic tests reported to state health departments. Another useful epidemiologic aid is provided by the contact reports furnished health departments by Army and Navy medical officers for the purpose of aiding in the discovery of disease in the civilian communities. An outstanding example of the practical epidemiologic assistance and aid to social control provided by these reports is illustrated in the studies of Norris, Doyle and Iskrant of contact reports in the Third Service Command.[6]

These authors, in two studies covering 10,057 contact reports, revealed that the paid prostitute constituted only 19 per cent of the contact problem, while the casual pickup to whom no fee was paid was the leading source of infection. The tavern, cafe and night club were found to be the leading sources of infection. Among white clandestine contacts the automobile was the most common place of encounter; among colored it was the home or apartment, with hotels and rooming houses accounting for the next highest proportion in both races.

Distribution of 10,057 known types of venereal disease contacts, 3rd Service Command, March, 1942, to June, 1943.

Type of Contact	*Number*	*Per Cent of Total*
Wife	811	8.1
Friend	2,402	23.9
Pickup, no fee	4,927	49.0
Streetwalker, fee	1,358	13.5
Brothel, fee	445	4.4
Callgirl, fee	87	0.9
Other	27	0.3
Total	10,057	100.0

(From Norris, Doyle and Iskrant)

Table 4

Wartime Experience. — Prostitute repression as an important feature of venereal disease control at first encountered considerable misunderstanding among law enforcement authorities and the general public. The ancient and usually sincere belief that prostitutes, as a source of venereal disease, could best be handled by segregation and regular medical inspection was still widely held.

This problem has been attacked largely through the aggressive program of the social protection division, with the cooperation of local law agencies. By July, 1942, as a result of this program, more than 300 communities important to the prosecution of the war had begun enforcing anti-prostitution laws. As police cracked down on redlight districts, shady hotels, and taverns, and as health departments intensified their efforts to locate infectious cases which were considered menacing to the public health, there arose the problem of where to isolate and treat. The difficulty of holding infectious syphilis patients under standard weekly treatment long enough to insure against infectious relapse was obvious.

Rapid Treatment Centers.—After considering all the facts the Federal government and a number of state health departments decided to embark on a cooperative program to provide facilities in which certain infectious venereal disease cases could be isolated and treated under the shortened schedules which had been developed.

It was recognized from the beginning that the short, intensive syphilis treatment courses of Chargin, Hirshfield, Hyman, Leifer, Wagner, O'Leary, Simpson, Schoch, Kendell and others would be hazardous if attempted by physicians without extensive experience. Therefore, the Public Health Service agreed to provide especially trained physicians and nurses to assist state health departments in operating the centers.

The collection of extensive, standardized medical reports on all cases treated was deemed

necessary. Reliable evaluations and analyses of large scale experience in the various intensive treatment methods, and their variations, could thus be made available to physicians, hospitals and health departments.

The need for a new approach to syphilis treatment was established by the knowledge that throughout the nation only about 25 per cent of all patients with early syphilis admitted to clinic service remained under continuous treatment for sufficient time to receive 20 injections each of an arsenical and a heavy metal, the minimum for insurance against infectious relapse. Almost all workers in syphilis control, private and public, agreed that the standard 70-week schedule held little hope for an early solution to the problem.

To date, 27 state and 3 Federal rapid treatment centers, with total bed capacity of 4,000, have been established. At least 15 others are contemplated. Since Federal and state health departments are not in the business of operating jails, every effort is being made to run these centers as hospitals for sick people rather than prison camps for infected prostitutes convicted for violation of vice laws. Several of the state and all Federal centers will accept men and children as well as women.

While there has not been time to accumulate sufficient data to justify evaluation of the various treatment schedules employed, a simple listing of these schemes may be of interest. They are six in number, as follows:

(1) Five-day slow intravenous drip
(2) Five-day rapid intravenous drip
(3) Multiple injection
(4) Shock method, seven-day intravenous drip
(5) One-day chemothermic therapy
(6) Eight-day chemo-fever therapy with vaccine

Research Developments.—In addition to the large scale research in intensive arseno-therapy represented by the rapid treatment center program, numerous experiments seeking to improve serologic tests have been conducted during the war period by many investigators. Another very important phase of research into rapid treatment is being conducted by Eagle, Hogan and Magnuson. Their evaluation of the intensive treatment methods for early syphilis have been invaluable in determining toxicity and margins of safety in relation to frequency of injection, body weight, and size of dosage.

Overshadowing anything that has happened in syphilis control since the days of Ehrlich are the penicillin in syphilis experiments of Mahoney, Arnold and Harris in the Venereal Disease Research Laboratory of the Public Health Service Marine Hospital, Staten Island, and of other investigators, including Army and Navy medical officers. A preliminary report was given by Mahoney in October of this year before the annual meeting of the American Public Health Association.

After limited animal experimentation had indicated that the drug possessed definite spirocheticidal activity and was practically nontoxic, penicillin was administered to four male patients with primary syphilis by intramuscular injection.

The arbitrary schedule used consisted of injection of 25,000 units of the drug at four-hour intervals, night and day, for eight days. Total number of injections was 48, total amount of drug was 1,200,000 units. The gluteal muscles was the site of injection.

After the sixteenth hour no spiral forms could be observed in secretions collected from the primary lesions. A comprehensive routine of serodiagnostic tests indicated that the therapy was responsible for a more or less rapid and complete disappearance from the blood stream of the reacting substance which is usually associated with activity in early syphilis.

Clinical reactions to the drug were mild but definite, including general malaise, mild headache, moderate temperature elevations, and enlarged regional lymph nodes. None of the symptoms were judged as representing toxic response to the drug.

The four patients will be maintained under close observation for the detection of any tendency toward a recurrence of positive serologic findings and any evidence toward clinical relapse. Effectiveness of the therapy in additional patients will be observed as soon as adequate supplies of the drug are obtained.

In conclusion, the report stated:

"Should later experience confirm the impressions to be gained from the present pilot study, a rebuilding of the entire structure of syphilis therapy may become imperative."

Syphilis in Industry.—Never before in the history of warfare has the factory played so important a part. The Allied Nations will win over the Axis only if maximum American industrial production is maintained. Therefore, the problem of what to do with the syphilitic

industrial worker has assumed national importance. Shall the possibility of infection be ignored and no attempt be made to obtain a diagnosis? If an expert machine tool operator in an airplane factory is discovered to have syphilis shall he be discharged? Will many workmen refuse to work in the same shop with an infected person? These are real questions and they need real answers based on the best scientific knowledge we possess.

To answer these questions the Surgeon General of the Public Health Service appointed an advisory medical committee representing industrial physicians, management, labor and the public. The recommendations of this committee have been accepted by the Surgeon General and promulgated to physicians, health departments, industrial managers and labor representatives throughout the nation. They have been endorsed in principle by the outstanding national organizations representing all interests. It is hoped that during and after the war every sizable industrial establishment in the country will observe the principles embodied in these recommendations.[7]

Results of Wartime Control Thus Far.—As was pointed out in the beginning, without an intensified control effort, this nation was virtually certain to experience a serious rise in syphilis. Control measures undertaken have been described. What have been the results?

Reliable incidence data on venereal disease are extremely difficult to obtain. The most comprehensive current figures in our possession are those of annual attack rates in the Army and Navy. From the Army peacetime low of 7 per thousand in 1939, the syphilis rate increased slightly as we began full mobilization, leveled off and then declined to the new, all-time low of 5 which has just been reported in the press. The Navy's 1939 rate of 13.34 declined to 3.50 in 1942 and is reported to be increasing gradually.

At present there are no data available on a national level that may be employed accurately in determining whether or not there has been an increase in the syphilis rates among the whole civilian population. However, there are indications, as yet unconfirmed through final statistical measurement, that no increase in syphilis has occurred in the general civilian population during the past three years.

When the statistical studies of the first 2,000,000 men examined under the current draft law were completed, it was estimated on the basis of rates then prevalent that when the total registered Selective Service population of approximately 14,000,000 had been examined, about 750,000 registrants probably would be found to possess clinical or serologic evidence of syphilis. Recently an actual count has been completed of selective service registrants with such evidence discovered during the period from the beginning of selective service in October, 1940, to June 30, 1943. Preliminary analyses indicate that 14,000,000 men were serologically examined and that approximately 710,000 had evidence of syphilis. This preliminary work requires further statistical refinement, and it is possible that these figures may be modified in either direction. However, our best estimates from knowledge available today, do not indicate that the war has so far brought an increase in the total amount of syphilis in the nation. This by no means indicates that the problem of wartime syphilis control in this country has been mastered. If anything, it indicates that we have only been able to "hold the line."

It may be concluded justifiably, therefore, that thus far our nation has been able to avoid the sharp increase in syphilis which is said to have been a characteristic of previous wars in this and other nations.

Obviously, holding the line will not win a war, and it cannot be said that we have made definite progress in reducing the damage syphilis inflicts upon our general health and our war-making effectiveness. A realization of this fact calls for continuing vigilance and increased effort. We are convinced that with this increased effort, and perhaps through the application of newer methods in therapy, epidemiology, and prevention, syphilis can be conquered in the United States.

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DISCUSSION (*Abstract*)

Dr. Paul A. O'Leary, Rochester, Minn.—The report given by Dr. Heller is evidence that the campaign against syphilis started by Dr. Parran and so ably carried out by his associates has begun to show favorable results. And by the data presented, it is also obvious that there is still much to be done in the program of minimizing the incidence of venereal diseases among the laity, especially the "non-professionals" who offer the most difficult of control problems to the public health officials.

The reports on the incidence of venereal diseases in the armed forces of this country have shown a decided decrease since the war started, and though great credit is justly due to the medical corps for creating such an outstanding reduction, at the same time we must not overlook the fact that many of the soldiers and sailors were in a receptive mood for preventive measures as a result of the publicity given to the venereal diseases for the past ten years by Dr. Parran and his colleagues.

For some time I have been of the belief that many patients who acquire syphilis "cure" themselves spontaneously and a similar group need but very little treatment to control their disease. The third group are those who acquire the disease and in spite of intensive and energetic treatment eventually develop one or more of the malignant complications of syphilis. A survey of the results of treatment of patients with acute syphilis in which various schemes have been employed, both new and old, shows that successful results are obtained in approximately 85 per cent of the cases. In other words, the failures from the accepted methods of treatment approximate 15 per cent. The effort retrospectively to evaluate any system of treatment for syphilis has in reality been an appraisal of the patient's defense mechanism against the disease rather than an estimate of the numerical value of the arsphenamines, bismuth, et cetera. Accordingly, today the syphilo-therapist is looking for a short, inexpensive and technically simple procedure which will pick out early in the course of treatment the patient who lacks resistance to the disease, because he is the individual in whom treatment should not be regimented but rather the one in whom the treatment must be individualized and specialized.

The procedure for the treatment of acute syphilis is now in the most unsettled state that it has been since Ehrlich introduced salvarsan; but, at the same time, the new methods now undergoing evaluation are being appraised on a more scientific and unbiased basis than heretofore. It is quite apparent that out of the present confusion will eventually come a program which will cure a higher percentage of syphilitics than heretofore with less cost and time to them and, I hope, few technical difficulties and complications.

RETINAL DETACHMENT SEEN IN AN ARMY GENERAL HOSPITAL*

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Twenty-one patients with detached retina were admitted to Lawson General Hospital, Atlanta, Georgia, between January 1, 1942, and September 1, 1943. This represented 4.19 per cent of the total eye admissions during this period. Statistically, this group is too small to be of much value, but it represents a group with average age less than that seen in civilian practice. The average age of this group was 27.8 years, while the average age of patients seen in civilian practice is about 40. Of the 21 cases admitted, ten were operated upon. All cases were unilateral.

It is difficult to define a cure in patients with retinal detachment. Anatomically, a cure would represent a complete permanent re-attachment. From the patient's view, cure represents permanent useful vision. The former is easier than the latter to secure. There are many reasons why central vision remains defective following anatomical cure, the most important being cystic degeneration of the macula. Dunnington and Macnie[1] suggest that cystic degeneration of the macula accounts for poor central vision following re-attachment of a detached retina that involves the macular region. They further suggest that macular detachment with cyst formation may be present even though not recognized clinically.

The etiology of retinal detachment is varied and often undetermined. A thorough examination will often reveal evidences of inflammatory disease. Cells in the anterior chamber, many vitreous opacities and areas of pigmentation prior to operation, are suggestive of inflammatory origin. Postoperatively, pigmentation at the site of diathermy punctures often resembles an infectious choroiditis. Among 21 cases of detached retina, six had evidences of choroiditis or uveitis previous to operation, and three others were considered suspicious. Twelve cases showed no evidence of inflammatory disease. One was secondary to a malignant melanoma.

It is said that about two-thirds of retinal detachments occur in myopes. Only 5 cases, or 23.8 per cent, were myopic. Trauma was con-

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sidered to be definitely associated in 4 cases, questionable in 2 cases and not associated in 15 cases.

Tears can be found in 50 to 80 per cent of cases. They are said to be found more frequently in spontaneous detachments. Holes or tears were found in 11, or 52 per cent, of cases. Of these 11, four were disinsertions or dialyses at the ora serrata. Maximum dilatations of the pupil and repeated careful search are often necessary to locate them. It is important to locate them, chiefly, in order to attempt to seal them at operation, but their presence indicates a slightly better prognosis than when they are absent.

Duke-Elder in his textbook of "Ophthalmology"[2] writes that Lister's statement in 1924, to the effect that presence of a retinal hole excludes a neoplasm, has never been contradicted. A patient with retinal detachment was felt to have a neoplasm and was advised to have immediate enucleation. Preoperatively, there was a large bulbous detachment with a tear present at the apex of the detachment. This was verified by several competent ophthalmologists. The patient refused immediate enucleation, and as there was considerable doubt as to the proper diagnosis, a diathermy operation was performed for retinal detachment. A large amount of straw colored subretinal fluid was removed, and examined for presence of tumor cells. Postoperatively, the detachment increased in severity and the patient finally consented to enucleation. A diagnosis of malignant melanoma was made by the Army Medical Museum.

The prognosis is dependent upon several factors, the more important ones being duration and extent of the detachment, presence or absence of choroiditis, and retinitis proliferans. Prognosis is said to be poor in aphakic cases. Two of the ten cases operated upon had an infectious choroiditis. Both had an unsatisfactory result. Of the three cases reoperated upon, none received a permanent improvement by the second operation.

Diathermy operation was used in all cases, with minor variations in technic. The single point electrode was found to be satisfactory.*

Most ophthalmologists in civilian practice use a diathermy machine constructed especially for detached retina work. Many are not aware that other types of diathermy machines are suitable for this work.*

The anesthetic used in most cases operated upon was 2 per cent butyn topically combined with retrobulbar injection of 2 per cent procaine. Cocaine was not used because immediately following completion of diathermy puncture, the fundus was viewed with the ophthalmoscope, and clouding of the cornea by the use of cocaine interferes with this. Immediate viewing of the fundus is considered valuable. Often the retina will be found flattened and one can frequently see where he has placed his barrages. If it is felt that the subretinal fluid has not been sufficiently drained, or that the hole or tear has not been sufficiently sealed, further barrages can be placed before closing the conjunctiva. Immediate viewing of the fundus has a prognostic value. If the retina is found flattened, the prognosis is better than if it remains elevated immediately following operation. The viewing of the fundus before the conjunctiva is sutured was suggested by Dr. Grady Clay, of Atlanta, Georgia. I have never seen any mention of this procedure in the literature.

Eleven of twenty-one cases were not operated upon. Seven of these had an inflammatory disease such as choroiditis, retinitis, proliferans or uveitis. Three had complete detachment of the retina. Cases considered not in line of duty were not operated upon.

Postoperative treatment consisted in keeping both eyes bandaged for thirty days, after which the patient wore pin-point spectacles another thirty days. Patients are encouraged to lie so the area involved in the detachment will be most dependent.

SUMMARY

(1) Evidence of infectious diseases of the eye such as uveitis and choroiditis was found in a large percentage of cases of retinal detachment. Prognosis was found to be poor in these cases.

(2) A case of detachment secondary to malignant melanoma had a tear at the apex of the detachment.

*Many Army hospitals are equipped with diathermy machines manufactured by the Liebel-Flarsheim Company of Cincinnati, Ohio.

*The Davis-Bovie machine does not require a current adaptor and is satisfactory. The Liebel-Flarsheim Company manufactures cords, electrodes, etc., and has a pamphlet with instructions as to use of this machine for detached retina work. The same company has recently marketed a detached retina kit which includes a special current adaptor, connecting cords, electrodes, etc., to be used with the portable, intermediate or mobile Bovie electro-surgical units. These latter machines, in themselves, do not have suitable current and must have the current adaptor for their use.

(3) The average age of patients with detachment was less than that seen in civilian practice as would be expected. Myopia was found associated in only 23.8 per cent of cases. The usual figure given is about 70 per cent.

(4) The use of a diathermy machine, not constructed especially for detached retina work but found in many Army hospitals, has been explained.

(5) Viewing of the fundus following diathermy puncture before the conjunctiva is sutured is considered valuable.

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THE EVALUATION OF EXCRETORY UROGRAPHY IN GENERAL PRACTICE*

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Indications are constantly increasing for excretory urography in the diagnosis of obscure abdominal symptoms, abdominal masses, malignant metastases with an unlocalized primary lesion, and in a survey of the urinary tract in known or suspected urinary disease. Because of its simplicity, safety, and the amount of information obtained, the procedure has been extended to every small hospital and also to office practice where x-ray is available. The responsibility of interpretation and evaluation belongs to the roentgenologist, and also the surgeon or internist, and is comparable with that of the barium study of the gastrointestinal tract or of cholecystography.

Before utilizing this excellent diagnostic procedure, one should know not only its indications, but also its limitations and contraindications, and the correct method of application.

Method of Application.—Because excretory urography depends, first, on the function of the kidneys and, secondly, on the dynamics of the urinary tract, either extremely poor renal function or any obstructive lesion in the urinary tract may interfere with satisfactory visualization. In poor renal function, this is a distinct disadvantage. In incomplete obstruction it is often of distinct advantage in locating the lesion and determining the amount of retention and kidney damage, but in completely obstructing lesions no function or visualization may be obtained on the affected side. This may be due to permanent damage to the kidney or to a temporary functional disturbance, which I shall discuss later.

In order to get correct information by excretory urography, no artificial change should be created in the function or dynamics of the kidneys or ureters. Visualization of the opaque medium should represent normal activity or the usual activity of the patient. The patient should never be dehydrated before examination, nor should the ureters be compressed unless the procedure is repeated after a regular urogram. The patient should not be required to maintain a full bladder if there is urgency, as this may produce some abnormal reflex through the sympathetic nervous system with disturbance of renal function or possible retention, which would be misleading in interpretation of the films.

Technical Procedure.—Unless the individual is a bed patient with considerable gas in the intestine or excessive material in the colon, no preparation is indicated. Then only an enema is necessary. Pitressin may be used occasionally to diminish the amount of gas, which may be determined by the initial survey films. The best survey films are done stereoscopically by shifting both the tube and the films in a vertical plane. In both exposures the tube is centered directly in the middle of the film. In the upper shift this will visualize the adrenal areas for tumor or calcification and in the lower shift will visualize all the bladder and the prostatic area for calculi.

The patient should be questioned for any allergic syndrome, such as asthma or iodine sensitivity. If the history is positive, the examination should be undertaken with caution. In the presence of sensitivity 1 or 2 c. c. of the media placed in the mouth will produce some numbness of the lips and swelling of the tongue. Epinephrine acts as a satisfactory antidote when such reactions occur. It will also reduce edema of the membranes. Hypertension, hyperthyroidism, and tuberculosis are, in my opinion, no contraindication to urography. In our clinic practically all patients with hyper-

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tension undergo urography to determine function and to rule out unilateral renal disturbance of the Goldblatt[1] type. Severe uremia or high blood urea is, of course, a contraindication, as no satisfactory visualization of the urinary tract can be expected. However, in many cases of prostatic hypertrophy or bladder tumor where catheterization is impossible, much valuable information can be obtained by an excretory urogram.

The amount of solution injected into the blood stream depends upon the choice of preparation. I have found diodrast (35 per cent by weight volume) most satisfactory. Thirty c. c. is usually injected into the adult patient with smaller amounts for young patients or children. In infants or small children the dye is diluted with normal saline, 25 c. c. diodrast with 75 c. c. normal salt, and injected into the subcutaneous tissue below each scapula, 50 c. c. on each side, after the method of Nesbit[2] of Ann Arbor, Michigan. All injections should be made slowly. Five minutes after the injection, the first film should be made; in adults another film should be made 15 minutes after the injection, another 30 minutes after the injection, and the fourth in one hour. Each film should be properly numbered so that the sequence of the exposures can be easily determined. In cases of known poor function a subsequent film in 2 hours may be indicated. In children the one hour film is omitted. I adhere strictly to this procedure in all cases. Any preparation or schedule should be repeated exactly in every instance, if evaluation of function is to be accurately determined. No severe reactions or other unpleasant experiences have been encountered in over 8000 cases.

Excretory urography has many limitations but can readily be augmented by cystoscopy and pyelography whenever necessary. In most instances the excretory urogram should be considered as the first approach to the problem, because a urogram following a recent pyelogram or catheterization of a ureter often gives misleading information. Trauma to the ureter by catheterization may produce ureteral spasm, or transitory retention in the ureter or kidney. If this sequence of examination is indicated, at least 24 hours should intervene between the pyelographic and the excretory urographic examination, whereas a pyelogram made immediately after a urogram may be quite satisfactory. In the study of early hydronephrosis this technic must be strictly followed, as a spasm of the ureter may produce a pseudohydronephrosis.

An excretory urogram may be of great diagnostic value, particularly in patients in whom urinalysis is normal and the symptoms do not definitely indicate disease of the urinary tract. This excludes most diseases of the bladder except possibly diverticulosis. Also, most bladder pathology may best be studied by cystography which is easily done in cases without obstruction in the lower urinary tract. In obstruction, however, the urogram will often be of great value in determining the presence of tumors of the bladder, prostatic tumors or enlargement, bladder diverticula, and occasionally bladder calculi which may accompany a prostatic hypertrophy or be present in a diverticulum.

(1) *Impaired Renal Function.*—Much may be learned with excretory urography about urinary function by the amount of opaque media in the kidneys and ureters. In the no. 1 urogram after the 5-minute period an impression of the rapidity of elimination of contrast media from the blood is obtained. This process is followed through to the no. 4, or 1 hour film. At that time after the injection of 25 c. c. of diodrast, the lack of visualization of contrast media in one or both kidneys, with few exceptions, gives a good estimate of total kidney function. The period for elimination varies with different media but can soon be ascertained for any preparation used for such an examination. If the time element is duplicated in each examination, a standard will soon be found on which to base a functional evaluation. In using this as a kidney function determination, however, some important phenomena should be kept in mind. During the examination one kidney may never show the presence of the media because it is diseased or nonfunctioning. In such an instance total renal function will have to be evaluated by the activity of the single functioning kidney, judged by the time it takes to eliminate the media.

In my experience one kidney occasionally may not visualize the media and be mistaken for a pathologic nonfunctioning kidney. Removal of such kidneys has been reported. Two such cases, found normal by pathologic examination, recently were reported to the author. I have not had such an experience, as in an apparently nonfunctioning kidney without infection or blood in the urine a retrograde pyelogram will disclose a normal kidney pelvis. Also urography repeated after a few days often shows a perfectly normally functioning kidney.

I have been very much interested in this phenomenon, and the suggestion has been made that this acute suppression of urine from a single kidney may be due to action on the kidney through the sympathetic nervous system with spasm of the vascular supply of the kidney, a phenomenon such as is seen in the blood supply to the extremities, particularly to the hands in Raynaud's disease. When surgery of the kidney is anticipated, renal function should be checked by ureteral catheterization. The kidney function can, however, be adequately determined in most excretory urograms, if the examination is undertaken with care and if the elimination of a given quantity of medium is known to be accomplished in a certain time by normal kidneys, without previous dehydration or artificial compression of any part of the urinary tract. In known impaired renal function where prostatic hypertrophy or lower urinary tract obstruction makes cystoscopic examination impossible, a film 2 or 3 hours after injection may help determine the degree of impairment of the renal function.

(2) *Hydronephrosis.* — Hydronephrosis, particularly the intermittent type which accompanies partial obstruction of the ureter, is usually difficult to diagnose and may not be suspected if urinalysis is normal. If this occurs in the right kidney with intermittent attacks of pain referred to the right upper abdomen and lumbar region, gallbladder pathology is usually suspected; retrocecal appendicitis or a duodenal ulcer also may be suspected. The history repeatedly shows operation for an appendicitis or gallbladder disease without relief of symptoms. If it occurs on the left side, some type of colon pathology is often suspected and a spastic colon diagnosed and treated. Hydronephrosis should be eliminated as a possible cause of symptoms in all atypical cases of suspected gallbladder disease with recurrent attacks, or in indefinite suspected diseases of the colon. An accessory or aberrant vessel at the lower pole of the kidney may produce partial obstruction of the upper ureter, particularly when the kidney undergoes slight ptosis and the accessory vessel arises from the abdominal aorta and not the renal artery. This taut vessel will elevate the ureter with consequent obstruction and the gradual production of a hydronephrosis. Symptoms occur early with intermittent recurrent attacks of pain with no urinary findings. In an early small hydronephrosis an excretory urogram should be made before a barium or gallbladder dye study is undertaken. No other type of examination gives as much positive evidence. If a pyelogram is done, one kidney may be distended a little more than the other and a mistaken impression of hydronephrosis entertained.

The evaluation of the urogram in such an instance is of great importance. First, the increased size of the kidney pelvis on the side suspected of symptoms will be the first indication that repeated attacks have dilated the kidney pelvis. As the urogram is followed through, the opposite kidney may clear the opaque medium on the 1 hour film, but some media may remain in the suspected kidney. The interpretation is complete clearance of the dye from the normal kidney indicating total normal function, and slight retention in a hydronephrotic kidney because of partial obstructon of the upper end of the ureter. Any attempt at artificial retention by compression of the ureter entirely defeats the evaluation of such a urogram.

Cases of hydronephrosis with all degrees of renal function usually visualize sufficiently to establish the diagnosis. In the presence of poor function and retained urine the visualization may be accomplished only in the ½ or 1 hour film.

Other obstruction of the ureter may be localized by dilatation of the ureter above the point of obstruction. This may be from calculus strictures, extrinsic lesions such as cysts or tumors of the kidney, or from some other mass in the abdomen or lesion of the bladder or urinary tract, and also in the hydronephrosis of pregnancy.

(3) *Urinary Calculi.*—Excretory urography is helpful in determining the location, visualization, and effect of urinary calculi on the dynamics of the urinary tract. The position of the kidney stone and its effect on obstruction or disturbance of function may be determined. In the diagnosis and location of nonopaque stone no other method is comparable with urography. These stones are often best, and sometimes only, revealed in the early films before the density of the urographic shadow obscures the stone. Likewise, the opaque stone is often lost in the dense shadow of a pyelogram. This was discovered by the author,[3] and the making of a pyelogram with a greatly diluted medium is recommended for the visualization of dense stones.

The urogram, however, meets all these requirements for both opaque and nonopaque stones, and a study of all films for stones is imperative in all urographic examinations. Sometimes, however, if the suspected calcification is in the

kidney shadow, a lateral film may be necessary to rule out an extrinsic shadow.

When the presence of a ureteral stone is determined, the question of complete or partial obstruction becomes important. In complete ureteral obstruction the accompanying kidney is usually not visualized, indicating absence of renal function. In partial obstruction some degree of hydronephrosis may be present and definitely determined. If removal of the stone is delayed, the renal damage can be studied by repeated urograms, and often complete loss of a kidney can be forestalled.

(4) *Anomalies of the Urinary Tract.*—Anomalies of the urinary tract usually produce no urinary symptoms early in the individual's life, and the abnormality is seldom suspected. The urogram offers an easy, and in most instances an accurate, method for ascertaining the presence of these lesions even before symptoms occur. This is of great significance when we realize that many of the lesions become pathologic sooner or later. To interpret them by the urogram it is essential to know their anatomic characteristics.

(a) The fused (horseshoe) kidney with a chain of abdominal symptoms, pain, constipation, possibly a palpable mass, and later urinary symptoms offers a desirable subject for examination by the urogram. With fusion the normal development of the kidney is disturbed, and the calices point toward the midline and the ureters far out. This should be a definite finding in the diagnosis. Pressure on the ureters crossing the fused kidney often produces retention and subsequent dilatation with infection or calculi. Such kidneys may be found anywhere from a normal location to the pelvic region, and frequently are palpable in the abdomen.

(b) The anomaly of pelvic (ectopic) kidney is found low in the abdomen and may be only a solitary kidney. The kidney may contain stones or other pathologic conditions and is usually palpable. Such a lesion should be suspected when a palpable mass is identified in the lower abdomen and pelvis, particularly when there are anomalous genitalia in the female with absence of the uterus or ovaries.

The urogram practically always gives correct information about the presence or absence and also the pathologic status of such a kidney. The visualization of a short ureter will differentiate an ectopic and a ptosed kidney.

(c) Duplication of the ureter and kidney pelves may be important, particularly duplication of the upper portion of the ureter, as it usually empties into the bifurcation at an angle and may develop disease by partial obstruction of the particular branch involved.

(d) The function of polycystic kidneys is poor or at least impaired, and their presence is of great importance in planning any operative procedure. Polycystic kidneys are large and bilateral and are usually palpable. If the condition is suspected, a urogram may be safely made. There are large widespread distribution of the calices and often many rounded areas in the kidney, suggestive of congenital cystic change.

(5) *Obscure Abdominal Masses.*—The excretory urogram usually identifies the kidneys and ureters and excludes or identifies the mass as connected with the kidney. The examination may show depression of the upper pole of the kidney by a large adrenal tumor, displacement of the kidneys by an adjacent mass, or forward displacement of the kidney by retroperitoneal tumors. Excretory urography should always be considered in any questionable mass.

(6) *Tumors.*—Tumors of the kidney may often be discovered by a urogram. Hypernephromas may produce no bleeding nor other urinary symptoms but usually may be recognized on the urogram by the deformity of the kidney, both by the irregular kidney outline or by disturbance of the normal architecture of the pelvis and calices. This method of diagnosis is very helpful in the presence of metastatic nodules in the chest and in bone metastasis where the primary lesion has not been located. Cysts of the kidney and benign tumors may often be satisfactorily recognized. Papillomas and carcinomas usually are accompanied by pain and hematuria, and attention will be directed to the kidney.

(7) *High Blood Pressure.*—In high blood pressure a renal study by excretory urography is not contraindicated. This may reveal a single pathologic kidney as described by Goldblatt, who suggested a feasible experimental etiology for cases of single kidney lesions and a logical indication for treatment.

(8) *Lower Urinary Tract Lesions.*—Hypertrophy of the prostate, cancer of the bladder, and lesions in which cystoscopy cannot be done, may be studied by intravenous urography. The extent of the lesion and its effect on the upper urinary tract can often be determined. Small lesions of the bladder obstructing a ureter, diverticula, and frequently the amount of renal

function may be ascertained by urography. Although tumors, pyonephrosis, hematuria, and all types of infections may be studied by intravenous urography, the interpretation of the findings is usually considered difficult, and in most instances the final opinion and diagnosis should be left to a competent urologist.

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DISCUSSION

(Questions and Answers)

Question.—I would like Dr. Nichols to make some comment about the use of this method during pregnancy.

Question.—Does Dr. Nichols consider it safe to do excretory urography if there is nitrogen retention?

Dr. Nichols.—I have a report of 100 patients on whom excretory urography was done during each month of pregnancy, and no untoward results were encountered in any case.

In nitrogen retention, we believe there may be some contraindication to the making of an excretory urogram. However, we have completed a long series of cases with marked hypertension and usually do not hesitate to examine a prostatic case with a high blood urea.

NEUROLOGICAL EMERGENCIES*

By CHARLES D. ARING, M.D.
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In a discussion such as this, one can hardly make a better beginning than to borrow from the moving essay of Wilfred Trotter[7] on emergency. He introduced the subject as follows:

"With whatever romantic notions we enter upon the practice of medicine, we shall probably find when we are actually engaged in it that but a small part of our time is taken up by the desperate or even the moderately urgent emergency. Nevertheless, it may be said without undue straining of the phrase that in a certain sense the whole of a doctor's life is passed in a medium from which the pressure of emergency is never remote. He may be described, perhaps not too extravagantly, as living to some degree like a soldier in an unfriendly country, where his whole behaviour must be alert and circumspect, and his reaction to events under careful control."

Like most emergencies in any field of endeavor the relatively uncommon neurological emergency allows little time for deliberation. Therefore it is well to have formulated a reasonable plan of action. It cannot be doubted that such forearming will be life-saving occasionally.

I am about to spend as much time in cautioning what is not to be done as in advising what should be done, since some of us are prone to fall in with the attitude, perpetuated by the newspapers, that by stout action we may halt Death in his tracks. As evidence against such notions we may borrow again from Trotter,[7]

". . . the more urgent the call for decision and action, the more important are character, the slowly matured power of judgment, and a grasp of fundamental principles, and less trustworthy are mere detailed knowledge and executive skill."

Many injuries and diseases which are not immediately fatal set up processes of resistance or repair which are effective enough to attenuate the lesion more or less largely. It is our duty to learn and to broadcast this cardinal principal of medicine, to nurture it and to squeeze from it every drop of benefit that may be afforded the patient.

The following conditions might be considered to be relative neurological emergencies: subdural hemorrhage, spontaneous subarachnoid hemorrhage, acute meningitis, status epilepticus, and acute bulbar palsy. The handling of each of these acute disorders of the central nervous system, particularly during their initial phase, will be discussed succinctly. Coma justly might be thought to belong in such a discussion. The differential diagnosis and therapy of comatose states transcend the relatively narrow bounds of the specialty of neurology; a previous attempt has been made to discuss coma in a series of papers.[4 5 6]

SUBDURAL HEMORRHAGE

Subdural hemorrhage follows on head trauma which may be mild. Veins bridging the space between the arachnoid and dura are torn and a relatively slow accumulation of blood results. The most important factors in the diagnosis of subdural hemorrhage are: (1) a history of trauma, or in its absence the evidences of trauma on physical examination; (2) headache; (3) any sign of brain dysfunction, particularly somnolence, confusion, or unilateral more often than

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bilateral neurological signs; and (4) increased cerebrospinal fluid pressure, and/or cerebrospinal fluid which contains blood or is xanthochromic.

Subdural hemorrhage rightfully falls in the province of neurosurgery, but its development is often so insidious that it may be mistaken for many neurological or psychiatric disorders. It ranks high in the incidence of the emergencies that come to the neurological ward of the Cincinnati General Hospital, where constant vigilance is maintained against it. Only since attention has been directed to the nature of the lesion, particularly by Leary[2] and Munro,[3] is the relative frequency of the condition becoming established.

The cliché, diagnosis is the first step in therapy, was never more true than in subdural hemorrhage. As soon as the diagnosis is reasonably suspected, the subdural space must be explored. In adults this is done by making bilateral trephine openings in the skull; in infants with an open anterior fontanel the subdural space may be tapped periodically, through the lateralmost aspects of the fontanel. In adults the therapy is best left to neurosurgeons, since a negative exploration usually warrants further diagnostic precedure immediately,[1] namely, visualization of the ventricular system with air.

The practitioners' chore is limited to suspecting the disorder. The result of failure to make the diagnosis is death, or possibly worse, longstanding mental invalidism.

The more acute condition, extradural hemorrhage, does not commonly fall into the hands of the practitioner. To produce extradural hemorrhage severe head trauma is required; fracture of the lateral portion of the skull may tear the middle meningeal artery or a venous sinus. The accumulation of blood between the dura and the skull is rapid and for this reason coma usually ensues promptly. In the event of extradural hemorrhage the patient practically always reaches the surgeon directly.

SPONTANEOUS SUBARACHNOID HEMORRHAGE

Subarachnoid hemorrhage is most often seen in the young adult, although it may occur at any age; its onset is lightning-like with excruciating posterior headaches, and pain in the back of the neck. Dizziness, nausea, and vomiting supervene quickly, as sometimes does pain low in the back. Stiffness of the neck results within minutes of the onset. Coma is not a frequent concomittant, and focal neurological signs are not commonly found. The cerebrospinal fluid is bloody and under increased pressure. Leaking aneurysm is considered to be the basis of the disorder.

The handling of spontaneous subarachnoid hemorrhage is symptomatic. Since photophobia is a common complaint the patient should be put to bed in a darkened room and allowed to remain in the quiet, undisturbed after a diagnostic lumbar puncture. Analgesia and sedation to control the violent pain must be given parenterally until nausea and vomiting are no longer a factor. Codeine and morphine should be given liberally, bolstered by an occasional dose of a barbiturate or paraldehyde. In addition to relieving pain these medicines promote rest which is a primary aspiration in this disease, as it is in any other in which hemorrhage is the factor. Sips of cold water or bits of ice should be given as the patient desires; later other fluids. Parenteral administration of fluids often will not be necessary with careful nursing.

A controversial point in the handling of subarachnoid hemorrhage is whether or not to do lumbar punctures. It has been thought that the reduction of intracranial pressure might release some tamponade effect, and result in further bleeding. I am not impressed clinically with this possibility for several reasons. I do not recall a single instance of recurrence of hemorrhage reasonably related temporally to lumbar puncture. Recurrences are not an uncommon feature of the disease while the patient is under strict observation in bed. The recurrences that I have witnessed have been in patients who had not been tapped recently, and in whom a subsequent tap confirmed the clinical impression of another subarachnoid hemorrhage. Obviously this is not conclusive evidence; a wide experience with this disease has not made me fearful of the carefully done lumbar puncture. It is thought best to reduce the initial pressure of the cerebrospinal fluid only by half. Since rest is of extreme importance, lumbar puncture should not be done after the initial diagnostic tap. Thenceforth puncture should be reserved for those times when the additional evidence afforded by an examination of the cerebrospinal fluid is needed, and as an adjunct in the relief of headache. Occasionally the patient may request a tap for the latter reason. Lumbar puncture should never be done in an attempt to remove blood from the subarachnoid space, a function which the organism can perform much more efficiently than the physician.

ACUTE MENINGITIS

Acute meningitis is characterized by the sudden onset of headache, vomiting, stiff neck, or in

some cases of convulsions or coma. It develops as a result of the invasion of the cerebrospinal fluid spaces and contiguous tissues by any of the pathogenic bacteria or by any agent which may act as a foreign body.

Meningitides which sometimes constitute an emergency particularly are those which cause a polymorphonuclear reaction in the cerebrospinal fluid.

Management of Acute Purulent Meningitis.—The invading organism usually is readily demonstrable with the Gram stain. Whether or not the organism is identified immediately, the administration of the sulfonamides should be the next step after the lumbar puncture in the management of acute purulent meningitis.

The sulfonamides have completely revolutionized the therapy of meningitis. How complete this revolution has been has not yet penetrated to the wards of some hospitals. Old routines become so habitual that they retard progress, even though their efficacy be quite limited.

Sulfonamide Therapy.—In the therapy of acute purulent meningitis, sulfadiazine is at the moment the drug of choice. Large amounts of the drug are used during the early stage of treatment. Attempts are made to maintain as high a blood level as is consistent with safety and comfort until the infection is well under control. The drug is continued in the same or slightly reduced doses for fairly long periods, to ensure against relapse. About 3,000 to 4,000 c. c. of fluids should be given daily to persons receiving these drugs.

Sulfanilamide (0.8 per cent) in distilled water. or a 1 to 2 per cent solution of the sodium salts of the sulfanilamide derivatives may be used intravenously, the daily dosage being 6 to 9 grams. The initial intravenous injection amounts to 6 to 9 grams, depending on the weight of the patient. If the subcutaneous route is preferred 0.5 to 0.7 per cent solutions of the sodium salt derivatives of the sulfonamides may be used. The intramuscular route is to be used only if another route is impractical, and then the injection is to be given as remote as possible from nerves (for example, into the vastus externus). Until oral therapy can be begun the daily parenteral dosage of 6 to 9 grams is continued, but after the first day the total dose is broken into three equal amounts and given at eight-hour intervals for sulfanilamide, sulfapyridine, and sulfathiazole, and in two equal parts every twelve hours when sulfadiazine is used. Oral administration is begun as soon as the condition of the patient permits; at the initial contact if coma, vomiting or nausea does not prevent. Two grams are administered initially and every two hours thereafter until 6 to 9 grams have been taken, thence 1 to 1½ grams are given every four hours (6 to 9 grams daily). Treatment usually is continued for 2 to 5 days after complete clinical and bacteriologic evidence of recovery in meningococcal meningitis, and for 10 to 14 days in pneumococcal and streptococcal meningitis, and for 2 to 3 weeks in all other cases.

The Case Against Repeated Spinal Drainage.—An important concept in the therapy of acute purulent meningitis with the sulfonamides is to do no lumbar puncture after the initial diagnostic tap. To lay aside the needle has been the most difficult, and some persons cannot be restrained from repeatedly tapping the subarachnoid space of these patients. Repeated spinal drainage lowers the concentration of the sulfonamide in the cerebrospinal fluid.[8] This fact is explained on the probability that fresh fluid is rapidly secreted through the inflamed hyperemic choroid plexus. The relatively large molecule of sulfonamide cannot pass from the blood through the endothelial lining of the vessel with sufficient ease to maintain a high concentration in fluid that is being rapidly replaced. Repeated drainage results in dilution of the drug-loaded cerebrospinal fluid with newly secreted fluid of low drug content, the fluid lagging behind the blood in its absorption of the sulfonamide, so that further fluid is removed before maximal concentration can be established.

There usually are no sequels in patients treated without lumbar puncture. If a cerebrospinal fluid analysis is done at the end of treatment the cell count is no higher in those cases which had not been drained and the pressure has been found to be generally lower. It has been demonstrated clearly that with bacteriostasis the cerebrospinal fluid can return almost to normal within a few days.

Great importance has been attached to a reduction in intracranial pressure supposedly accomplished by repeated tapping. High intracranial pressure itself does not necessarily cause cerebral damage. In fact, those cases treated without repeated tap are more apt to have normal intracranial pressure at the end of the treatment than those receiving repeated drainage. It is generally accepted that lumbar puncture may cause temporary relief of headache and may occasionally produce remission of meningeal symptoms or diminution in the depth of

unconsciousness, and when it can be performed without distress to the patient it may sometimes be justified for symptomatic relief alone. But with chemotherapy the period of grave illness is so short and the difficulty in performing lumbar puncture in the first few days is often so great that analysis of the cerebrospinal fluid obviously should be done only initially. No rule can of course be made to cover exceptional cases. In rare instances, small, infrequent taps may be required to determine accurately the progress of the disease.

Neither high cerebrospinal fluid pressure nor the absence of artificial drainage prevents the passage of certain sulfonamides through the choroid endothelium into the cerebrospinal fluid. The concentration is higher if normal flow and absorption are undisturbed by repeated drainage, and in this case is more than is required for adequate bacteriostasis. The concentration is distinctly low in those patients whose cerebrospinal fluid is repeatedly removed.

Type Specific Antibody.—Specific serum should not be used in meningococcic meningitis unless the patient does not respond promptly to the sulfonamides (after 24 to 48 hours of adequate chemotherapy), or if the attack is severe and fulminating with a profusion of petechiae in the skin. The amount to be administered intravenously (or intramuscularly if necessary) should be such as to establish and maintain an excess of antibodies in the circulating blood. Usually one large intravenous dose of antimeningococcus serum (300 c. c.) in about 600 c. c. of 10 per cent dextrose in physiologic solution of sodium chloride (0.85 per cent) to which 1 c. c. of 1:1000 solution of epinephrine hydrochloride has been added is administered slowly and may be repeated if necessary. Serums or sulfonamides should not be given intrathecally.

Therapy of Pyogenic Meningitides Other than Meningococcic.—In some cases of meningitis, particularly those in which the organism is the pneumococcus, streptococcus or staphylococcus, the focus of origin must be attacked surgically coincident with sulfonamide therapy. It is clear that the patient with metastatic meningitis responds better when abscesses in sinuses, ears, and so on, are cleaned up coincidentally. A thorough search should be made for foci which can be eradicated by surgical means. Type specific antibody in a single intravenous dose should be given early, the amount depending on the severity of the disease as indicated by the clinical and cerebrospinal fluid findings. Serum may be administered by slow intravenous drip diluted in physiologic saline, Ringer's or sulfanilamide solution. It is thought that in meningitis due to pneumococci of known types, homologous specific rabbit antiserums should be used. All patients with type B influenza bacillus meningitis should receive specific antiserum as soon as the organism is identified.

Symptomatic Therapy.—Symptomatic therapy should not be overlooked. Dehydrated patients may be given glucose drinks. Parenteral administration of fluids may be necessary, but the oral route is preferable if at all possible. Nausea and vomiting are sometimes accompanied with constipation, and an enema is indicated in patients taking the sulfonamides if the bowels have not moved for 48 hours. Restlessness may be allayed by chloral hydrate in doses up to 30 grains by mouth. Paraldehyde may be used by mouth or by muscle (4 to 8 c. c.), by vein (1 to 3 c. c.), or by rectum (16 c. c.). Morphine sulphate or the barbiturates also may be used.

It would seem superfluous to advise rigid adherence to isolation technic and sterile precautions, particularly in epidemic meningitis.

Diagnosis and Management of Acute Syphilitic Meningitis.—The usual cerebrospinal fluid findings of acute syphilitic meningitis are an increased pressure, a pleocytosis of varying degree, an increased protein content, a normal or moderately decreased sugar and chloride content, an abnormal colloidal gold reaction, and a positive Wassermann reaction. Syphilitic meningitis may appear any time after the chancre, but in the large majority of cases occurs within the first two years of the disease. Syphilitic meningitis responds quickly to the arsenicals. Treatment should be started with mapharsen 0.04 gram (or 0.3 gram neoarsphenamine) intravenously as soon as the disease is suspected, since days may pass before it is possible to obtain a serological report. A second dose of 0.06 gram mapharsen (or 0.6 gram neoarsphenamine) may be administered within three days, and this amount may be administered every six days thereafter until the patient has received about 20 injections. Coincident with the last intravenous injections of the arsenical, 2 c. c. of bismuth may be given intramuscularly and repeated weekly until 10 or 20 doses have been given. Then mapharsen at weekly intervals should be given again, and this alternation of drugs continued until the cerebrospinal fluid is completely normal. The cerebrospinal fluid is examined thoroughly every four to eight months. Tryparsamide is substituted for mapharsen at the end of one year of treatment if there has not been a marked reduc-

tion in the cerebrospinal fluid abnormality. Fever therapy is considered if the fluid shows little progress after another year of tryparsamide and bismuth therapy.

STATUS EPILEPTICUS

Convulsions occurring repetitively, with short intervals between during which the patient does not regain consciousness, are known as status epilepticus. The fits are generalized more frequently than localized (jacksonian). The latter are the more dangerous in respect to their ability to produce death despite vigorous therapy.

The prompt ministrations of a physician are requisite in status epilepticus. To halt the seizures an intravenous injection of 1 to 2 c. c. of paraldehyde should be administered to the adult. The drug is withdrawn from a stock bottle since the solution is sterile. This therapy usually will result in prompt cessation of the seizures. A second injection of 1 to 3 c. c. of the drug may succeed where the first injection has failed, although on rare occasions failure to halt the seizures by a second injection may result. Occasionally it may be preferred to begin the immediate therapy with a larger dose of paraldehyde intramuscularly, say 8 to 12 c. c., depending on the size of the individual. This dosage should be decreased if the patient has had any other sedative within the previous one or two hours. An intramuscular injection may be all that is required to halt the convulsions. If the seizures continue, four to six grains of sodium phenobarbital may be given intravenously or intramuscularly. The dosage of these drugs is reduced appropriately for children and infants.

With the use of either or both of these medications the fits usually cease, but the patient may remain in stupor. Then a nasal tube may be passed into the stomach so that fluids and dilantin sodium may be administered at regular intervals until the patient recovers consciousness. Dilantin sodium is a potent anticonvulsant; 1½ grains may be given three to five times within 24 hours. If fever accompanies status epilepticus, repeated tepid or cool sponging is indicated.

The case that will not respond to this therapy is indeed rare. If the repeated attacks are jacksonian in type (usually localized to one side of the body), and therefore usually due to demonstrable brain disease (tumor, abscess, syphilis, trauma), they may not respond readily to therapy. We have seen two patients having repeated jacksonian seizures convulse to death despite the use of the best known treatment.

In the absence of paraldehyde or sodium phenobarbital, other sedatives may be used with good effect. Any of the barbiturates may be given parenterally. Morphine sulphate, ether, or chloroform are some other drugs which may be used. They must be employed with caution, however, since large doses usually are required (except morphine where 1/6 to 1/4 grain will suffice) and as they are severe depressants. It must be kept in mind that one of the symptoms to be combated in status epilepticus is coma.

The further diagnostic and therapeutic handling of a patient who has suffered from status epilepticus is the same as that of the person suffering from the usual type of grand mal epilepsy.

BULBAR PALSY

Two types of bulbar palsy may constitute neurological emergencies. The type that is seen in poliomyelitis, infectious polyneuritis, and other rarer diseases that attack the medulla need not be discussed extensively, since therapy then revolves around the use of the mechanical aids to respiration, usually the Drinker respirator. A simple and important point is the use of suction to clear the mouth and throat of accumulations of saliva and mucus. Feeding by nasal tube or sometimes parenterally is required if the patient is unable to swallow.

A more common type of bulbar palsy met with in neurological practice is supranuclear palsy (pseudobulbar palsy), in which several lesions, usually of vascular nature, have involved the fibers descending from both sides of the cerebral hemispheres and limited the patients' ability to swallow, talk, and sometimes to move his eyes voluntarily. Supranuclear palsy is usually accompanied by weakness of the limbs, and by extensor plantar responses (Babinski, Chaddock) from the feet of both sides. The more automatic functions such as breathing and heart action are not interfered with in such a manner as to endanger life.

The emergency handling of supranuclear palsy concerns feeding particularly. Practically without exception these persons regain the ability to swallow if supported over the critical period. A stomach tube should be inserted through the nose and the portion extruding from the nose should be taped to the side of the face and clamped shut when not in use. Adequate liquid feeding may be administered by this method. The mouth must be cleared of secretions by suction. Swallowing may be tested with small increments of fluid

when the patient is fully conscious; the nasal tube should be dispensed with as soon as feasible; usually this may occur sometime within the first or second week. Patients with supranuclear palsy representing a neurological emergency may regain considerable voluntary movement, and have been known to walk and talk again.

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THE HEART IN PREGNANCY*

PROGNOSTIC ASPECTS

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"There are few subjects in medicine of which an accurate knowledge is more urgently required than that of a woman's fitness for child-bearing."

Those are the words of Sir James Mackenzie, the first sentence in Chapter 1 of his now famous monograph, *Heart Disease and Pregnancy*.[1] Twenty-two years later we still find many important gaps in our knowledge of fitness for childbearing in the presence of heart disease. Two aspects of heart disease are of major importance in pregnancy. These are diagnosis and prognosis. Misdiagnosis, the mistaking of the gestatory heart for heart disease, for example, may lead to unnecessary treatment. Errors in prognostication may lead to mismanagement and death. In no other field of medicine does prognostication so affect therapy as it does in the obstetric cardiac. It is with this phase of the heart in pregnancy that the present report deals.

Early in the present century cardiologists in general awakened to the knowledge that the functional state of the heart muscle and the cardiac reserve were a better index of the patient's ability to get around and withstand operative procedures than the anatomic diagnosis. Before World War I prognosis was based almost entirely upon the anatomic defect alone. Shortly after that war Mackenzie pointed out the fallacy of predictions based upon the anatomic defect alone. He called attention to the importance of the functional capacity of the heart as a measure of its ability to carry through pregnancy. Mitral stenosis, for example, is an important and serious anatomic defect, but its effect on myocardial function generally represents its true importance. Pardee[2] was among the first systematically to apply this principle to the obstetric cardiac, couched in the terms of the cardiac diagnosis as to functional capacity as advocated by the Criteria Committee of the New York Heart Association.[3] This terminology includes four categories. Class I includes patients in whom the cardiac disorder produces no limitation of physical activity. Here ordinary physical activity causes no discomfort. Class II (formerly IIa) includes those in whom there is slight to moderate limitation of physical activity and in whom ordinary physical activity causes discomfort. Class III (formerly IIb) includes those with moderate to great limitation of physical activity, in whom less than ordinary physical activity causes discomfort; and, finally, Class IV represents those in whom any physical activity causes discomfort. The latter are essentially bedridden patients.

The use in obstetric cardiacs of this classification of patients has met with much enthusiasm and widespread use not only in this country but in Europe as well.[4] In general, the rule holds that patients in Class I will give little or no trouble; those in Class II probably will not; those in Class III may present a serious problem, and those in Class IV not only present difficulties in management, but a high mortality as well. Jensen,[5] in collecting from the literature a series of patients classified by this method, found that, of 975 cases in Classes I and II, there were 4 (0.41 per cent) deaths; of 338 in Class III, 18 (5.33 per cent) died, while in Class IV, of 115 women, 26 (22.61 per cent) died. Such figures bear out the worth of the classification.

In applying these rules to the pregnant woman, one must recognize that certain symptoms

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used in the classification of cardiac patients in general may arise in normal pregnant women. Evaluation must be made in terms of the normal pregnant woman of similar type and stage of pregnancy. No satisfactory functional test for cardiac reserve has been found and the patient's reaction to her daily activities has been as adequate as any other test at present. Also cognizance must be taken of the fact that the cardiac state in pregnancy is not static, that, with progress of the pregnancy or of the heart disease and with changes in environmental factors, a patient may need reclassification from time to time. Individualization is essential. Each patient is a problem unto herself to which general principles and rules must be adapted.

Despite the widespread acceptance of the classification as to functional capacity, there have been a number of objections to its use. Schuman[6] in 1935 advocated a more simple division into mild and severe cases. The latter, he felt, must be treated individually. Hamilton[7] grouped those with definite heart disease as serious cases and felt that he could not profitably divide these into clearly bad and clearly good risks. Others[8] have met with difficulty in applying the classification as to functional capacity.

Lamb[9] found the functional classification alone insufficient for satisfactory prognosis as to outcome. In 110 patients in Classes I and II he noted that 12 patients (11 per cent) became decompensated. Sheehan and Sutherland[10] found that of those with chronic valvular disease who were destined to die of any cause in pregnancy or the puerperium, one third of those without decompensation at 23 weeks died a cardiac death. In other words, in his group, if a patient's heart were assessed at 23 weeks, two-thirds would fall in Class I with negligible mortality, but nearly half of subsequent cardiac deaths would occur in patients to whom an excellent prognosis had been given. On the other hand at 30 weeks over half the patients would have been in Class I and only one-fourth of the cardiac deaths would have been foreseen. They feel that the classification as to functional capacity is of some significance when based on the patient's condition in the last quarter of pregnancy, a time which is too late for important decisions in therapy.

Reports such as those just cited have prompted the present discussion. We have already stated that the increasing load of pregnancy, as it progresses, adds strain to both the normal and the damaged heart, and, with reduction of cardiac reserve by heart disease to an unknown degree short of that producing insufficiency, this added burden may be expected to exceed the reserve in certain patients and precipitate cardiac failure. To these added burdens so acting in pregnancy, other precipitating factors for heart failure may be added, factors which may be active inside or outside pregnancy but which, when added to the increased burden of the pregnancy itself, become doubly important. In general such a factor leading to the development of congestive heart failure can be found in over 50 per cent of the patients.[11] Such precipitating factors include infection, exercise, sudden rises in blood pressure, psychic trauma, hemorrhage, shock, coitus, alcoholism, dietary excesses, malnutrition, anemia, and arrhythmias associated with rapid heart action. Many others could be added to this list which, to be complete, would include all causes of cardiac strain. One of the prime functions of prenatal care in obstetric cardiacs is to forewarn the patient of such causes, for, in contradistinction to the burdens of pregnancy itself on the heart, they represent in a large part burdens which are removable or correctable. Sudden undue exercise and upper respiratory infections are the most common and the patient is instructed as to these points. The usual instructions on exercise given the average pregnant woman are eliminated. Rest is important. Fatigue is avoided. Walking, entertaining and activities increasing the cardiac burden are completely done away with. Infection, especially upper respiratory infection, is avoided and, if contracted, rest is advised. Careful watch for the earliest evidences of heart failure is diligently carried out and the patient treated accordingly.

To be sure the sudden insults the heart may receive through development of factors precipitating heart failure may rapidly and unexpectedly change the patient from one functional class to another, and such episodes explain in part some of the failures of the functional classification to predict the outcome of the patient and the proper therapeutic procedures.

Such factors do not, however, explain all the discrepancies. Certain other aspects of the patient enter into the evaluation. Mackenzie knew well the added hazard that auricular fibrillation represents even though the functional classification does not reflect it. Since most heart disease, usually 90 per cent or more, in pregnancy is rheumatic, such a factor as auricular fibrillation can be evaluated very well in this more or less homogeneous group. Other

factors also add hazards not covered by the functional classification. These may be classified as those which, inside or outside pregnancy, subject the patient to sudden unpredictable disaster and those in which pregnancy seems to add a peculiar hazard of its own. However, rather than list these factors in this way and rather than include all known heart disease where sudden accidents are common, we list here those which have been a particular problem to us or which, when our own experience has been meagre, the literature has indicated as important. These include age, auricular fibrillation, marked cardiac enlargement, aortic stenosis, rheumatic activity, hypertensive pictures, certain types of congenital heart disease, syphilitic aortic regurgitation, previous congestive heart failure, bacterial endocarditis and important complicating disease. It will be noted that some of these concern heart disease other than that due to rheumatic fever, and for this reason have received little attention. The high incidence of hypertensive disease in our clinic makes this type of particular interest to us and the other types are seen sufficiently often to make them matters of consideration rather than neglect.

Age.—The age at which the patient becomes pregnant has a direct bearing upon the possible development of congestive heart failure, even though the functional classification at the outset is Class I. Gorenberg and McGeary[12] found, for example, that in 267 patients under 30, only 43, or 16.1 per cent, showed signs of heart failure, whereas in those over 30 the figures were 34 of 78, or 43.6 per cent. Hamilton[7] has noted a two-fold increase in heart failure in the group over 35 years of age.

Auricular Fibrillation.—The increased hazard added to pregnancy by the presence of auricular fibrillation has already been mentioned. Mackenzie was quick to note this relationship and all who have studied the problem since his time have been struck by the same facts. So important is this disorder that extremely high mortality rates have been reported. Robinson[13] found a death rate of 72 per cent in 18 cases, but the figures usually given are closer to 33 per cent.[7] These figures indicate the undesirability of pregnancy from the medical standpoint, and auricular fibrillation may be considered as an adequate contraindication to pregnancy. If the patient is seen in the first few months of pregnancy, termination by therapeutic abortion is justified. However, if the woman knows the risk involved and has a real desire for a child, intensive treatment may make possible continuation of the pregnancy. Many factors are to be considered in denying a woman a child and the medical reasons may not be the most important in her mind. She may welcome the risk.

After the first few months of pregnancy, following the time after which therapeutic abortion cannot be done, continuation of the pregnancy with adequate control of the heart rate by digitalization and a rigid program of rest is indicated.

Marked Cardiac Enlargement.—Marked enlargement of the heart reflects severe cardiac strain. Addition of the strain of pregnancy increases the insult to a condition in which the prognosis is already a grave one. Such patients should not become pregnant.

Aortic Stenosis.—Patients may withstand the effects of aortic stenosis for many years. Its presence does not necessarily portend trouble. However, in some patients this valvular defect, especially when marked, subjects the patient to dramatic symptoms, including vertigo, syncope, anginal pain, and sudden death. Such findings may appear with little warning.

Active Rheumatic Fever.—We have rarely found active rheumatic fever in pregnancy. Activity of rheumatic fever is more common in the younger age groups, up to the time pregnancy may be expected. Yet its rarity in pregnancy deserves comment. In some parts of the world, the frequency is greater but the figures of Carr[14] coincide with our experience. He found only 8 instances in 1,061 consecutive cases of chronic rheumatic heart disease in pregnancy. Hollander and Goldsmith[15] have discussed the subject with similar conclusions.

Hypertension.—The variable course of hypertensive disease and the explosive character which pregnancy at times adds to hypertension make prediction of the course of such pictures almost impossible in pregnancy. In addition, pregnancy frequently leaves the patient with aftereffects which shorten life. Herrick,[16] for example, found that, of 594 patients with hypertension during pregnancy, 90 (15.7 per cent) died during the following 5 2/3 years, and 80 per cent of these died of cardiovascular-renal disease. Sudden changes in blood pressure often develop and may be accompanied by signs of heart failure. That the rise in blood pressure alone is not responsible for the cardiac failure is generally conceded in acute hemorrhagic nephritis and the same is probably true in the suddenly developing pictures in pregnancy. The patient with hypertensive disease demands

close, careful, frequent examination to make possible adequate prognostic and therapeutic plans, which cannot be based solely on the functional classification. Then, too, the extracardiac effects of hypertensive disease may completely overshadow the cardiac effects and guide the management of the patient. The hazard of hypertension is not terminated by labor. Musser, Sodeman and Turner[17] have described the sudden development of these pictures, with and without nephritis, in the puerperal period.

Congenital Heart Disease.—Congenital lesions account for 1.5 to 2.5 per cent of cardiac disease in pregnancy. We have seen a number of patients in whom pregnancy has progressed and terminated normally in the presence of marked cyanosis. Others have reported similar results.[18] Two types of congenital heart disease are said to add to pregnancy hazards which are unpredictable by the functional classification. These are lesions with arterio-venous shunts and coarctation of the aorta. We have not seen serious accidents with either, and in the past 5 years 3 of the former and 2 of the latter have come through the service. Carr and Hamilton[19] indicate that with arterio-venous shunts, reversal of blood flow after sudden release in peripheral pressure, for example in cesarean section or version, may lead to death without congestive heart failure. Under such circumstances sudden serious complications might develop. We have not seen this picture.

Mendelson and Pardee[20] have observed 4 patients with inter-ventricular septal defects, and, with 32 others from the literature, found 4 deaths (12.5 per cent), 2 being from congestive heart failure. These figures indicate definitely a mortality rate about 4 times that of heart disease in general in pregnancy. Likewise, in 31 reported cases of patent ductus arteriosus, there have been 6 deaths, only 2 of which have been ascribed to the lesion, and in none of these were there noted arterio-venous shunt effects.[20] Such lesions, however, do constitute a special category, and efforts to maintain the blood pressure and avoid hemorrhage are especially in order.

Coarctation of the aorta also adds a serious hazard. In the 2 patients we have seen, no difficulties have arisen and the patients have been delivered normally. There are in the literature 32 reported cases of coarctation of the aorta in pregnancy.[21 22 23 24] These have averaged about 3 children each. Of the 32, 6 died during pregnancy or soon after delivery, and 10 of the surviving patients were definitely made worse by the pregnancy. Deaths resulted from ruptured aorta and bacterial endocarditis in 2 instances each, heart failure and cerebral accidents in one case each. The great danger of rupture of a thinned out aorta or of cerebral vessels is apparent.

These hazards are not related to pregnancy alone. Outside pregnancy the danger of sudden death or serious accident follows the patient with coarctation. Pregnancy and labor add their share of strain to the already susceptible tissues.

Treatment in coarctation is not settled. The high mortality and detrimental effects of pregnancy make contraceptive advice imperative. Early in pregnancy therapeutic abortion is indicated, but if pregnancy advances and interruption from below is not feasible, Mendelson advises cesarean section and sterilization. This we did not carry out in our patient, nor did Walker in his. Our decisions were guided, as were Walker's, by the general state of the patient, the small size of the fetus with normal presentation, and what appeared to be an easily dilatable cervix.

Syphilitic Aortic Regurgitation.—The speed with which heart failure may develop in some patients with syphilitic aortic regurgitation and the difficulty with which certain of these patients regain compensation make prediction as to outcome unreliable in this condition. Marked aortic regurgitation offers a serious prognosis. The average length of life is only several years at best. Obviously the insult of pregnancy is to be avoided.

Previous Congestive Heart Failure.—Despite the fact that the patient may be well compensated when seen and may fall into Class I, the history of previous congestive heart failure indicates impaired cardiac reserve and the possibility of its development again. These statements are borne out by experience. In one group,[12] 75 per cent of those with a history of heart failure in the past developed heart failure again in pregnancy. In those with no previous

decompensation only about 15 per cent developed heart failure.

Bacterial Endocarditis.—Although reports of subacute bacterial endocarditis were slow to appear in medical literature,[4] some estimates indicate that about 1 per cent of all obstetric cardiacs have this disorder. It may antedate pregnancy or develop during the gravid state. Older literature indicates the frequency of bacterial endocarditis as part of puerperal sepsis (acute variety), but puerperal sepsis was probably often mistaken for it. In 19 instances of subacute bacterial endocarditis reported in pregnancy [25 26] only one-third had heart lesions recognized at the beginning of pregnancy. Two-thirds of the patients progressed beyond the seventh month and of 12 viable infants 10 survived, the 2 deaths being unrelated to the maternal infection. In 2 instances fetal blood cultures were positive but later became negative.

Pregnancy does not seem to be important as a cause of subacute bacterial endocarditis, nor does it appear to confer any immunity.[25] Neither does it seem to hasten the disease. The prognosis for the mother is hopeless, but for the fetus is good. Therapeutic abortion is not indicated, but the mother is carried to term or to the period of viability. Cesarean section is indicated on the moribund patient or as postmortem section.

Important Complicating Disease.—The addition of such diseases as tuberculosis, which in themselves affect cardiac reserve, must be considered in prognosis. Likewise other chronic diseases having systemic effects, nephritis, and diabetes, fall in the same category.

SUMMARY

It seems clear from the available facts that neither the anatomic diagnosis nor the functional capacity alone is all important in prognosis. In general, functional capacity appears to be most important, but other factors also, age, the presence of auricular fibrillation, marked cardiac enlargement, aortic stenosis, active rheumatic fever, hypertension, certain types of congenital heart disease, previous cardiac failure, bacterial endocarditis, and serious complicating disease, may play a part in prognosis. This list is by no means complete, but it represents the important items. The middle ground appears to be the correct one. Clearly the problem of prognosis is not simple. The divergence of views cited indicates how unsettled and insecure prognostication is, in spite of the advances in cardiology. To undertake the task of prediction of the course of the disease, so that a therapeutic approach most beneficial to both the mother and child will follow, requires decisions in an ill charted field of medicine where danger always lurks.

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ACUTE DERMATITIS OF THE HANDS DUE TO HANDLING AND DRESSING WILD RABBITS*

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During the winter months of 1942, we observed in our routine office practice a series of fourteen cases of acute dermatitis of the hands in patients who attributed the outbreak to handling and dressing wild rabbits. Thus far, we have observed one similar case this fall, even though the hunting season is only in its infancy. In our experience here in North Carolina over a period of seventeen years we had never before recorded a case of dermatitis of this nature which was interpreted as having resulted from contact with the skin, flesh or blood of the rabbit. We have made thorough investigations into the histories of this series of patients in an effort to establish a diagnosis of a venenata or a chemical dermatitis, but our findings in relation to the handling of the animal have been so consistent in all of the cases observed that a conclusive and definite diagnosis of "rabbit dermatitis" was arrived at in the entire series.

Knowing that the public in this section of the country has been tularemia-conscious in recent years, we first regarded these cases as irritations from the excessive scrubbing of the hands with strong soaps by these patients in their effort to avoid this infection, but the histories of these patients did not bear out this assumption. Moreover, since the great majority of these cases were from the rural districts, we tried to associate the disturbance with exposures to poison ivy or the trumpet vine, but the patients in this series gave no definite history of contact with either of these plants and were positive that the dermatitis was due to contact with the dead animal in each case. The eruption is in no way associated with tularemia nor have any of the cases developed this disease.

The most interesting report in the group comes from a family of five, all of whom developed the eruption after handling the same rabbit. The father and two sons skinned and dressed the rabbit and the mother only handled the flesh of the animal after it was prepared for cooking. All four developed the dermatitis. Only the father made the hunt; the remainder of the family gave no history of having been in the woods or fields for some time previous to the appearance of the dermatitis.

The eruption begins as a vesicular dermatitis, primarily in the palms of the hands, twenty-four to forty-eight hours after exposure. Later, large bleb formation may ensue, often with a hemorrhagic effusion beneath the epidermis, giving the hand a dark, purplish appearance. Marked swelling with intense itching characterized all of the cases. Very little extension up onto the forearms was noted in any of the series. The dermatitis is uniformly more severe than an ordinary venenata; the patients are extremely uncomfortable and two of the series had a low grade temperature. Therapeutic response to simple local applications was not satisfactory, but light x-ray therapy was given the majority of these patients with good results. No complications have been observed.

In this preliminary report we are unable to make an accounting of the specific etiological factor involved in these cases. Unfortunately, we have not been able to obtain the fur, skin or blood from these animals in question for appropriate patch tests.

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EDUCATION OF THE HOUSE STAFF NOW AND AFTER THE WAR*

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The light of medical education is going out throughout the world, or is flickering feebly. There are two bright exceptions. In the British Empire and the United States, medical schools and hospitals remain open, are meeting their responsibilities for medical education, research and are furnishing medical care at the highest possible level under present day conditions. This fact is of extreme importance, for with the peace, we will be the two sources of medical education and will become meccas of medical education. For that reason, a great obligation and responsibility is ours! We must maintain not only the present system of education of the house staff, but maintain actual house staffs as well, so that medical education shall not have lost ground.

The distinguishing feature of a hospital is, of

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course, the medical care and nursing service which it provides for the doctors' patients. Of equal importance is the instruction of physicians, interns, medical students, nurses, dietitians, occupational therapists, social service workers and others, especially the public. The training of interns and residents, which is our subject today, assures the patient of higher quality professional service. The medical school gives the student a basic preparation in medicine, but the art of medicine, with the opportunity to obtain sufficent experience in diagnosis and treatment under supervision, must come at the bedside. It is of great importance to the community that the hospitals can take students recently graduated from medical school and in three to six years, by furnishing them a thorough, well rounded intern and resident service, train these young physicians so that they can take their places in the community as men of good judgment, possessing a reasonable degree of technical skill.

Members of the resident staff (those who wear white suits) live in the hospital day and night. Within that body are young doctors of varied training and proficiency. The youngest members are interns. The next higher grade is that of assistant residents, a rank achieved only after one or more years of internship. The highest grade is that of resident. A resident is generally appointed from the group of assistant residents because of his record of excellence. He is an experienced and proficient doctor who, after graduation from his medical school, has had the benefit of from three to five years of intensive training under experts in all possible fields relating to illness. It is to our interest and to the interest of the patient that not only we, but the public, understand that whatever functions the house staff carry out are for the benefit of the patient and for the entire field of medical education.

What is meant by a thorough, well rounded resident service is a period of special training which shall be of such character that the relation of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences and medicine will be required on the examination of candidates for the various American specialty boards, combined with adequate experience in clinical training and treatment in which the resident has assumed the whole responsibility for the care of the patient.

Today the dogs of war are loose again and medical education, as like all other education, has been curtailed. The present nine-month term of service, known as the 9-9-9, not only reduces the amount of time allowed for house staff training, but in a measure denies to a certain percentage of medical graduates the opportunity to select hospitals of their choice for training. This fact, by forcing young graduates to intern in hospitals of varying degrees of efficiency, undoubtedly lowers the standard of medical education to that degree. We must win the war, but we must not forget that the ideal of the graded house staff system was originated in the United States, and its essence in the modern hospital accounts in large measure for the superiority of American hospitals and the stimulation to medical education. That ideal must be preserved. In view of the fact that the present 9-9-9 system of allocation of interns has upset this principle of resident training, past experience with those principles should be kept firmly in mind for the future. As a reference, a statement of the "Fundamental Principles for Graduate Training for General Surgery and the Surgical Specialties," is to be found in the Bulletin of the American College of Surgeons for October, 1939. Only the best and most modern medical and surgical procedures can be carried out in an atmosphere permeated by the severely critical attitude of teaching and of the aspiring young doctors who come from all of the best medical schools of the country as members of the resident staff to be trained under the supervision of the older men who constitute the attending staff.

Unless we train these young physicians in hospitals with the best of background in medical education, they will be merely distributors of medical care and will not have the capacity for clinical research. For instance, here is a young man who interns only nine months in a hospital and then goes into military service. When he returns to practice, unless we provide a means of further training, that physician does not have the background or knowledge of the various clinical research procedures, nor does he have the fundamental training for independent work of that nature. If he does not have either the actual background of experience or the educational training to enable him to carry on independent clinical research, it is only natural that he must depend upon the clinical journals, which he cannot read because he is too busy, and the detail man from various drug companies, poor substitutes for clinical training.

One of the dividends to be derived from excellent house staff education is the postgraduate education of the visiting staff. Postgraduate education is a matter of attitude, of desire, of

atmosphere. It is really part and parcel of the life of the physician, the nurse, the hospital administrator, and in fact, of all professions. Continued education has interested physicians since Hippocrates. Of a certainty this interest extended to the Aesculapia, or hospitals, of that day. Really, there is little new about the subject. An extensive literature, both basic and technical, has grown up, and the truth demands that I tell you that much of what follows is plagiarism, but as Kipling says:

"When 'Omer smote 'is bloomin' lyre,
He'd 'eard men sing by land an' sea;
An' what he thought 'e might require,
'E went an' took—the same as me!"

The secret of good intern education is largely in having an enthusiastic and interesting house staff. The reward is better medical care to the patient. There must be a leader who himself is enthusiastic and who can in turn inspire the staff to sustained interest in medical education. With such a leader, the most commonplace and often tedious routine becomes touched with amazing interest.

Stimulate the interest of the staff and any teacher becomes an orator. The reason is clear enough.

"Oratory is of the audience rather than the orator. Take a cold bar of iron. Lay it on an anvil, and smite it—hammer it as you will. The off-come is clamor—a clangorous horror of uproar. But heat the bar white-hot. Lay it again on that same anvil, and with the same hammer strike that selfsame blow. Instead of clangor, the result beautiful is a fire-shower. And on the hot and spitting iron remains the deep mark of your effort."[1]

And so it can be with postgraduate education and the house staff.

"It may be your pat occasion when man and hour meet."[1]

Get the interest of your staff at white-heat. Lay it on the anvil of opportunity, and then strike with the hammer of teaching, and the rest is known to you. And yet, as said before, it will be the class and not the teacher who will furnish the eloquence.

Continued education of the house staff is vital in maintaining the professional standard of the hospital. It requires sustained effort on the part of both the trustees and the medical staff. The hospital administrator plays an important role by being the liaison officer between the house staff and the governing body. This calls for the highest type of cooperative effort, combined with intelligent appreciation of the results obtained in all departments of the hospital. Organization of the house staff is essential. There is no other way to reach and maintain a high standard of postgraduate training, which, in turn, means a high standard of clinical care given the patient. Organization makes possible staff conferences, which are a basic requirement for approval by the American College of Surgeons. These conferences devoted to the problems of scientific medicine play an important part in house staff education. It is an ideal place to present experimental work, clinical methods, and the development of new methods and technics. Pathologic, radiologic, physiologic, and other conferences in any hospital are an effective means of keeping abreast. If, in addition, the hospital has developed internships and residencies on a truly educational basis, the effect is much greater. A further advantage is that the staff may furnish definite evidence that the care of the patient is of high quality, a clinical audit if you will.

At these conferences much depends on the personality and ability of the chairman. He must, as we have indicated, be able not only to arouse interest and enthusiasm and to attract and inspire staff members to attend and give their best work, but he must be able to conduct the meeting in a business-like manner and see that the discussion follows a definite course. The more educational and scientific manner in which material can be presented, the more interest will be aroused. It is unfortunate that general practitioners often have not access to these excellent educational opportunities in the hospitals. It would be a wise plan if hospitals which have well developed staff conferences and teaching programs for their own visiting staff would invite the general practitioners of the area to attend the staff meetings.

The report of the Commission on Graduate Medical Education, published by the University of Chicago Press in 1940, gives much information that is particularly helpful. This publication not only treats the subject of postgraduate education for general practitioners but for specialists, and what is of particular importance today, the postgraduate education as it applies to the intern, assistant resident and resident. The war accentuates the need for continued education of the visiting staff. It is conceivable, particularly in the more urban communities, that physicians not now admitted to practice in many hospitals may properly seek such privileges, and if it is decided to grant them this privilege, here is a splendid opportunity to ask that they take some type of postgraduate training. We do this for

staff nurses who return to hospital duty after having been away from the hospital for some time, and the results are gratifying to the nurse and to the hospital.

"There is a type of education which is not always recognized as such, namely, the day-to-day association with colleagues in the same or in different fields of medicine. This is one of the values of hospital staff appointments, since they multiply such opportunities. While in its formal aspect this becomes a consultation, much education of this sort goes on informally in the dressing rooms, on the wards, and in the corridors of the hospitals. The value of this daily contact with an organized well-trained staff cannot be over-emphasized."[2]

A word about consultations. The young physician is fortunate who learns early to have medical consultation for his patients whose conditions are difficult to diagnose or who are critical. Early consultation protects him from censure by the family for not obtaining aid. Even if the patient is improving, the family will often call in a consultant, with or without the consent of the attending physician. Such situations are always embarrassing, and usually not best for the patient. The attending physician not only protects himself from such embarrassment, but shares the responsibility for the care of the patient with a consultant. The physician who has learned this also prevents himself from falling into the grievous and all too common error of infallibility.

One of the best graduate courses in instruction is the postmortem examination. It is, furthermore, one of the best preventives of the error of infallibility, and although it is seldom so considered, is an excellent source of consultation, the pathologist being the consultant. Postmortem examinations are disagreeable and expensive, but essential. The responsibility of the hospital to obtain postmortems is definite. The information gained is not only useful for postgraduate instruction of the attending staff, but by the experience thus gained improves its clinical judgment and skill. The hospital administrator should make the same check through the medium of the record librarian, the staff history meetings, reports to the American College of Surgeons, to the American Medical Association, and by personal observation.

We may not realize that an adequate number of interns is a most essential contribution on the part of the hospital toward the continued education of the visiting staff. Why? First, because the visiting physician is required to teach the interns. In teaching the teacher becomes a student. Teaching is a stimulus of no mean virtue to the teacher. Some men are natural teachers, but most of us can do the job if required. Secondly, the intern fresh from medical school brings to the hospitals and to the visiting staff, knowledge of new diagnostic technics and methods of treatment, and oft-times if the intern has had previous training at a large or teaching hospital and possesses the ability to carry out the procedure, he may become a teacher instead of the pupil.

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M. Y. DABNEY, M.D., Editor
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EDITORIAL DEPARTMENT

CARE OF BURNS

Fire is one of the main weapons of the present war, and along with hemorrhage, fracture, and visceral perforation, the burn is one of the common and deadly types of war injury. Therapy of burns has gone through many phases. One of these depended upon keeping the patient's body submerged in saline solution. Deep burns are extremely painful and require treatment over a long period. There is considerable body fluid loss through the burned area, with a resulting danger of protein deficiency and blood concentration; and attempts to seal in the escaping body fluids with corrosives such as tannic acid have many arguments in their favor. However, superficial burns and frequently deep burns also contain islands of uninjured epithelium, preservation of which could greatly facilitate healing, and these are destroyed by treatment with the corrosives or coagulating agents. Also, necrosis of the liver due to tannic acid used in burn treatment has been observed.

In recent years, experiments have been conducted in the attempt to supply a solution which on drying would leave protein precipitate, which would protect the wound from fluid loss and pathogenic bacteria with less tissue damage. Solutions of human placental plasma and bovine sera have been tried. They were for the most part difficult to prepare, slow drying, and according to Curtis and Brewer,[1] of Baltimore, have no logical advantage over other simple protein solutions containing the essential amino acids. These workers undertook to prepare a sterile, flexible, inexpensive and easily transported solution which could be used by untrained personnel at the front. Preliminary experiments indicated that milk protein, a complete protein, could be used advantageously as the base of a quick drying, non-irritating solution with which extensive burned surfaces could be quickly coated. A combination of casein, sodium lauryl sulfate, sodium lactate and water formed a solution which they found useful and convenient and employed in a considerable series of extensive deep burns and wounds. For badly weeping surfaces, to prevent oozing and the necessity of constant changing of dressings, they used a transparent film covering over the protein precipitate. A desirable covering, they say, is made from polyvinyl chloride, which, in addition to being transparent, is soft and flexible and may be used upon surfaces where there is motion as over a joint. The burned areas thus were made very comfortable so that the patient could lie on them or walk about. Pressure bandages were applied over the film and considered valuable in preventing congestion and maintaining circulation.

Through the transparent solution and film, wound healing could be watched and evidence of infection detected early; and skin grafts could be applied before scar tissue had formed. The time of treatment was reduced. Plasma protein loss was less than when petrolatum gauze or ointments were applied. Not only was the casein solution non-toxic, but Curtis and Brewer believe that the adjacent cells were actually nourished by it. They consider this effect important in the preservation of vital tissue. They consider this plan of treatment convenient, simple, and excellent for relief of pain. In their series of 165 severe burns, there were only five deaths, and these occurred in patients who had 60 per cent or more of the body surface involved.

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THYROID STRUCTURE AND FUNCTION

The first endocrine diseases to be successfully treated were those of the thyroid. Clinical conditions of hypo- and hyper-function were early demonstrated, the pathologic pictures described, and with the isolation of thyroxin in 1915, therapy with this pure chemical became possible. Thyroid surgery is still necessary in many patents, although methods of prevention of goiter are generally known.

The thyroid is an extremely labile and reactive gland. It hypertrophies within a few hours after exposure to cold. Goiter pathology has taken on a new interest since it has been demonstrated that it may be caused by several drugs in common clinical use. The thiocyanates, sulfonamides, and thiourea induce hyperplasia of the human thyroid, as well as that of small animals. These products apparently interfere with one of the steps in the formation of thyroxin in the thyroid, while causing enlargement of the gland itself. Baumann, Metzger and Marine,[1] of Montefiore Hospital, New York City, have studied the mechanism of the over-stimulation of the thyroid by thiourea. The thyroid is a very efficient filter for iodine, and apparently its size varies inversely with the iodine supply; the larger the gland, the smaller its iodine content. But if thiourea is given during the administration of iodine, the thyroid does not store it. The thyroxin content of the thyroid falls and hypertrophy begins, as in iodine deficiency. This effect was observed in two days by the New York investigators, who believe it would progress to the usual goitrous condition if thiourea and iodine treatment were continued. They note that urinary iodine at the same time increased, showing that the kidneys were the means of disposal of the iodine. About half the total iodine content of a normal thyroid is lost within four days if thiourea is administered.

Baumann and associates wondered whether thiourea reacted directly with the iodine to give an excretory product, and concluded that if this were true it should be possible to administer enough iodine to satisfy the thiourea requirements, and have enough remaining for thyroxin production in the thyroid. They found that even the administration of large amounts of iodine did not improve thyroid function or prevent hypertrophy after thiourea treatment. Thiourea does not act by seizing iodine from thyroxin and removing it from the body, but by a direct interference with thyroxin formation. Treatment with thiourea produces a definite picture of hyperplasia with hypoactivity, hyperplasia of frustration, it has been called elsewhere, secretion and gland structure being thus independent. Similarly the sulfonamides inhibit thyroxin production, but cause thyroid hypertrophy, or intense stimulation of thyroid cell growth by the thyrotropic hormone of the pituitary. As has been noted, they cause a functional thyrostasis.

Dempsey,[2] of Harvard Medical School, has attempted further to analyze the chemical content of the cells of the rabbit thyroid after treatment with thiouracil, to study the chemistry of the above described thyrostasis. Fluorescence of normal thyroid colloid, he says, is associated with its protein and particularly its thyroglobulin content. Thyroglobulin is lowered in the thyroid colloid of thiouracil treated rabbits. The antithyroid drugs, thiourea, thiocyanates, and the sulfonamides, which prevent formation of thyroxin, he says, interfere with the activity of the enzyme peroxidase, which is necessary to the condensation of diiodotyrosine into thyroxin.

Thyroid hypertrophy and failure of thyroxin production occur so promptly after administration of certain drugs, that the question arises of consideration of this fact during administration of sulfonamides: of whether thyroxin might be given to advantage during any period of sulfonamide therapy of a week or more. These studies remind one again that beneficial as the sulfonamides are under many conditions of infection, they have also their dangers, one of which is perhaps interference with formation of the thyroxin, and they are probably being used too freely.

OVULATION AND TEMPERATURE

The midmenstrual period is usually taken as the time of ovulation in women. However, there are many variations of this, and in cases of irregular cycle, elaborate means of determining ovulation have been employed. The exact time or release of the ovum is of considerable importance in sterility studies. It may be learned by endometrial biopsies, which are expensive and somewhat troublesome. A few years ago it was

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2. Dempsey, E. W.: Fluorescent and Histochemical Reactions in the Rat Thyroid Gland at Different States of Physiological Activity. Ibid., p. 27.

noted that a pronounced change in electrical potential occurs at ovulation. Again, determination of this requires apparatus not otherwise used by the gynecologist.

Tompkins,[1] of Philadelphia, calls attention to the importance of a simple method which is not new but has been forgotten. It consists of a regular daily temperature record of the patient, which she is able to make for herself after careful instruction and after being provided with suitable graph paper. The monthly variations of temperature of a healthy woman are slight, being shown in fifths of a degree, but are constant, and are usually to be detected if carefully observed over a period of months. Temperature readings of course may not be used during a cold or any other mild illness of the patient. The temperature is low during the first part of the patient's cycle, drops to its lowest point at about the time that ovulation occurs and rises definitely immediately after to a relatively high level which is maintained until the next menses, when it again drops abruptly. If conception occurs, the temperature will remain at the high postovulation level, and this may be used to indicate pregnancy before the Friedman test or clinical signs have become positive.

The characteristic fluctuations do not occur before puberty, after the menopause, or in men.

This is such a simple, harmless and inexpensive method of examination that, as the author says, even though it may not be conclusive in all cases, it should be routinely employed, as giving readily available information of value.

TWENTY-FIVE YEARS AGO

From Journals of 1919

Influenza Epidemic.[2]—In the latter part of October 1918, when the epidemic of influenza was at its peak in this locality (Baltimore), the seriousness of the disease as seen in pregnant women caused considerable alarm among those in charge of obstetrical cases. . . Pneumonia complicated the influenza in about one-half of the pregnant women here. . . . In the cases complicated by pneumonia, about fifty per cent of the patients died, the mortality being somewhat greater during the last three months of pregnancy.

Paris.[3]—The epidemic of influenza which had declined has broken out anew in a most disquieting manner . . . the *Assistance Publique* has taken measures to meet the increase in the number of hospital admissions (an average of two hundred per day). The epidemic has assumed grave proportions not only in Paris but in several of the departments.

Lima.[1]—First Lima and then the rest of Peru are still suffering from the ravages of the pandemic of influenza . . . in the capital the mortality from this cause trebbled the total mortality during the months of November and December.

London.[2]—Influenza continues to claim many victims, especially in Scotland, the North of England and the Midlands. In the last weekly record there were 580 deaths from influenza and pneumonia in Glascow . . . 50 per thousand per annum. . . At a conference held at the Institute of Hygiene, Sir Malcolm Morris, the President, criticized the recommendations of the Local Government board. The solution of common salt and potassium permanganate recommended for washing the nostrils and throat he described as a horrible mixture. He had found a solution of colloidal silver beneficial. . . . Persons who in an omnibus or tube coughed without putting up their hands . . . should be prosecuted for indecency.

Bombay.[2]—A government report on influenza in India states that the first influenza epidemic in Bombay city was in June last, and was responsible for more than 1,600 deaths. A subsequent virulent outbreak occurred in September, October and early in November, during which period the mortality in Bombay city exceeded the normal by 14,678.

Treatment.[3]—Groups of patients—fifteen in each—were put on different drugs . . . aconite, acetyl salicylic acid, sodium salicylate, belladonna, arsenic, quinin, Dover's powder, and gelsemium. . . The patients treated by gelsemium improved in a manner far exceeding those given any other treatment.

1. Tompkins, Pendleton: The Use of Basal Temperature Graphs in Determining the Date of Ovulation. J.A.M.A., **124**:698 (Mar. 11) 1944.

2. Harris, J. W.: Influenza Occurring in Pregnant Women. A Statistical Study of 1350 cases. J.A.M.A., **72**:978 (April 5) 1919.

3. Medical News. Paris Letter. Ibid., p. 1015.

1. Lima Letter. Ibid., p. 1016.

2. Ibid., p. 1016.

3. Small and Blanchard: Treatment of Influenza. Brit. M. J., p. 241 (Mar. 1) 1919. Abst. J.A.M.A., **72**:1034, 1919.

Book Reviews

Experimental Surgery: A Laboratory Guide for Undergraduate Students. By J. M. McCaughan, B.S., M.D., Ph.D., Assistant Professor of Surgery, St. Louis University School of Medicine, St. Louis, Missouri. 81 pages, illustrated. St. Louis: The C. V. Mosby Company, 1943. $2.00.

This is a loose-leaf laboratory guide in plastic binding for the use of undergraduate students who take Prof. McCaughan's course in experimental surgery. It is excellently arranged and serves its purpose well.

The introductory chapter deals with problems associated with operations upon experimental animals, the dog being the animal generally used in the course. Special attention is given to preoperative medication, depilatory, effects of ether upon the dog, methods of fastening the dog to the operating table, postoperative

care of the dog if he is to be saved, and painless methods of putting to death those animals that are not to be further used.

Following the introductory chapter are thirteen exercises, each dealing with some important phase of surgical work. In these exercises, practically all the regions and organs are subjected to critical study, carefully checked by operative results upon experimental animals.

The general outline for each exercise is approximately as follows:

(1) Discussion of the purpose of the particular problem to be studied.

(2) Procedure to be followed in carrying out the several surgical experiments in relation to the problem.

(3) Class quiz on all matters pertinent to the problem.

(4) Bibliography of papers bearing on the subject to be used as a guide for outside study.

Each exercise carries a comprehensive operation and anesthetic record sheet, and another sheet for recording daily progress notes, gross postmortem findings, conclusions, and answers to questions. There are two additional blank pages for special notes.

The operations are well illustrated.

Laboratory Directions in Biochemistry. By Victor C. Myers, M.D., Ph.D., D.Sc., Professor of Biochemistry, Western Reserve University. 288 pages. St. Louis: The C. V. Mosby Company. $3.50.

The first edition of Myers' Laboratory Directions in Biochemistry is the outgrowth of 32 years' experience in medical school teaching. The book is planographed and the form is excellent. The book is bound in a loose-leaf, plastic binding.

The contents of the book are divided into four parts: (1) The first section covers carbohydrates, lipids, proteins, protective and connective tissues including bone, muscle, nervous tissue, blood, milk, saliva, digestion, bile and both qualitative and quantitative urinary constituents. (2) The second section takes up the clinical application of biochemistry and the following subjects are included: gastric analysis, duodenal contents, feces, clinical examination of urine and chemical analysis of blood. (3) The third section includes additional experiments for dental students. They include quantitative determinations on saliva, bone, and teeth. (4) The fourth section is an appendix which includes an explanation of the use of visual and photoelectric colorimeters, the preparation of tenth-normal acid and alkali, and various tables.

The text is printed on one side of the page so that the alternate side of the page may be used for notes.

This new manual is an excellent work and should take its place among the outstanding laboratory manuals in biochemistry.

Peripheral Vascular Diseases (Angiology). Saul S. Samuels, A.M., M.D., Consulting Vascular Surgeon, Long Beach Hospital, Long Beach, New York. 84 pages. London, New York and Toronto: Oxford University Press, 1943. Cloth $2.00.

This monograph of 83 pages describes in complete and rather dogmatic manner, the etiology, pathology, symptoms, objective findings, and treatment of each subject presented. Discussions of specific diseases are preceded by chapters on the anatomy of the blood vessels of the extremities and of the autonomic nervous system, and on classification and symptomatology of peripheral vascular diseases. As the volume is put out as an outline, very little space is devoted to theoretical discussion. In lieu of this, an extensive bibliography follows each chapter.

The author does not approve of intermittent venous pressure machines, or of suction and pressure machines, such as the pavex, and thinks that they may be definitely harmful in some instances. He does not think that sympathectomy or alcohol or novocaine lumbar block are of any value in arteriosclerosis obliterans or in thrombo-angiitis obliterans, though sympathectomy may be helpful in Raynaud's disease of the lower extremities.

In addition to chapters on the usual obliterative diseases of the extremities, there are interesting chapters on axillary vein thrombosis, frost bite (thermal gangrene), cervical rib and scalenus anticus syndrome, globus tumor, and diseases of the lymphatics.

The monograph is an excellent guide to the recognition of peripheral vascular diseases, their differential diagnosis, and methods of treatment.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Edited by Richard M. Hewitt, B.A., M.A., M.D.; A. B. Nevling, M.D., John R. Miner, B.A., Sc.D., James R. Eckman, A.B., and M. Katharine Smith, B.A. 999 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1943. Cloth $11.00.

Volume 34 is compiled from papers of the Mayo Clinic and Foundation from December, 1941, through November, 1942. The section on chemotherapy is of special interest, including the sulfonamides, penicillin, gramicidin, heparin, and dicoumarin. Special emphasis is given to sulfadiazine in the treatment of urinary tract infections and to succinyl-sulfathiazole in freeing the colon of bacterial growth, preparatory for surgery of the colon.

The medical and surgical aspects of many branches of medicine are emphasized. Among the subjects are thrombo-phlebitis, phlebo-thrombosis and pulmonary embolus.

Mention is made, but the technic is not given, for vein interruption and the removal of a clot. This simple operation may revolutionize the treatment of thrombophlebitis.

Operations for duodenal ulcer and colon lesions have been revised during the past decade.

The Mayo staff is in agreement with the view that subtotal gastrectomy is the operation of choice for cure of a duodenal ulcer.

For the colon lesions, the one-stage hemi-colectomy for right colon lesions has replaced the multiple stage operation. For the left colon lesions, one-stage resection of the lesion with end-to-end anterior anastomosis, and providing an antecedent or complement cecostomy or colostomy, depending on degree of obstruction, is the method of choice in the greater number of clinics. A few operators are recommending one-stage resection,

omitting colostomy and depending on decompression of the intestinal tract with Levine nasal tube with suction, or the use of the Miller-Abbott tube.

On the chapter of the ductless glands, we find the parathyroid body tumors are of special interest in relation to certain body changes, among which are the general symptoms of body weakness, fractures from the loss of calcium, formation of urinary calculi, blood vessel calcification (arterio-sclerosis) and metabolic and chemical disturbances, as an increase of the serum calcium (hypercalcemia) and disappearance of such symptoms following the surgical removal of the parathyroid tumor.

The chapter on orthopedic problems, diaphragmatic hernia, myasthenia gravis and its relation to the thymus gland tumor, are taken up and discussed in a clear manner and will be of value to the physician interested in these respective subjects.

Finally the chapter on recent advances in surgery contains much of particular interest. This is a well-rounded volume, up to the usual Mayo standard.

The Substance of Mental Health. By George H. Preston, M.D., Commissioner of Mental Hygiene for the State of Maryland. 147 pages. New York: Farrar & Rinehart, Inc. Cloth $1.75.

Just now juvenile delinquency and the facts that ten out of every one hundred selectees for military service are rejected for a psychoneurotic condition, and thirty out of every one hundred who are sent home from service are psychoneurotic, are causing great anxiety among parents, welfare workers, and psychiatrists. At present we are spending billions to teach the three "R's" and very little for training the emotions. Perhaps a partial reversal of this would be helpful.

One of the consoling thoughts in this book to parents is that the place to bring up a child is in the ordinary home where there are duties and competition and the training of responsibility. It is safer to have fallible human parents than saints. Praise, affection, responsibility, and self-reliance can be taught as a group in the ordinary family. During adolescence, a compromise between biological urges and social restrictions must be developed. Small children thrive on loving and shrivel without it. License, indulgence, and lack of training in responsibility are the factors back of spoiling. Belittling must not be confounded with correction or direction. Encourage independence rather than obedience. Blind obedience may become a poison. Remember that if you train a child properly you should lose him. Then the job is done and done well. Parental training should be completed for a child by the end of adolescence so that he may know self-confidence, reliance, and responsibility and be able to cope with competition in the ordinary social set-up.

The intent of this book is to show the right to mental health, what lies behind that right, how it is obtained, and how passed on. This is told in the simplest language and can be read without a dictionary. It can be heartily commended to parents and persons interested in mental hygiene.

Southern Medical News

ALABAMA

The Governor has announced the appointment of an Advisory Board for Alabama's four-year medical college, University of Alabama School of Medicine: Dr. W. M. Salter, Anniston, for a five-year term; Dr. James S. McLester, Birmingham, four-year term; Dr. J. Mac Bell, Mobile, three-year term; Dr. W. D. Partlow, Tuscaloosa, two-year term; and Dr. Harry Lee Jackson, Birmingham, one-year term. Dr. Stuart Graves, Dean of the present two-year medical school at the University, will be an ex-officio member of the Board. Members of the Board are required to be members of the Medical Association of the State of Alabama. The Advisory Board will meet and advise with the Building Commission and the Trustees of the University on matters pertaining to the Medical School.

Alabama physicians accepted into fellowship in the American College of Surgeons in 1943 were: Dr. Benjamin M. Carraway, Dr. Gilbert E. Fisher, Dr. Robert A. Hamrick, Dr. William D. Warrick, Dr. Charles H. Wilson and Dr. Joseph D. Wilson, all of Birmingham; Dr. Alton W. Davidson, Bessemer; Dr. J. Banks Robertson, Fayette; and Dr. Gerald H. Teasley, Athens.

Dr. William D. Lyon has resigned as Pediatric Consultant to the Bureau of Maternal and Child Health of the State Department of Health to enter private practice at Andalusia.

Deaths

Dr. W. D. Wood, Camp Hill, aged 62, died January 7 of hemiplegia.

Dr. Andrew Wade Haden, Summit, aged 89, died recently of chronic nephritis.

Dr. Frank Edmoundson Nabers, Birmingham, aged 73, died March 10.

ARKANSAS

Arkansas Medical Society will hold its next annual meeting at Little Rock, April 17-18.

Saint Francis County Medical Society has elected Dr. D. A. Mohler, Palestine, President; Dr. J. M. Roy, Forrest City, Vice-President; and Dr. J. O. Rush, Forrest City, Secretary-Treasurer.

Fifth Councilor District Medical Society has elected Dr. G. F. McLeod, Magnolia, President; Dr. A. D. Cathey, El Dorado, Vice-President; and Dr. W. C. Magness, Camden, Secretary.

Bradley County Medical Society has elected Dr. W. N. Roark, Hermitage, President; Dr. Rufus Martin, Warren, Vice-President; and Dr. W. J. Hunt, Warren, Secretary-Treasurer.

Chicot County Medical Society has elected Dr. B. C. Clark, Lake Village, President; Dr. W. A. Craig, Eudora, Vice-President; and Dr. M. K. Bottorff, Lake Village, Secretary-Treasurer.

Cross County Medical Society has elected Dr. A. F. Barr, Cherry Valley, President; Dr. J. S. Miller, Wynne, Vice-President; and Dr. Thos. Wilson, Wynne, Secretary-Treasurer.

Hot Springs County Medical Society has elected Dr. R. V. McCray, President; Dr. W. E. Barrier, Vice-President; and Dr. M. D. Prickett, Secretary-Treasurer, all of Malvern.

Crawford County Medical Society has elected Dr. F. A. Boomer, Van Buren, President; Dr. C. J. Campbell, Mulberry, Vice-President; and Dr. S. C. Grant, Mulberry, Secretary-Treasurer.

Johnson County Medical Society has elected Dr. Earle H. Hunt, President; Dr. Geo. L. Hardgrave, Vice-President; and Dr. G. R. Siegel, Secretary-Treasurer, all of Clarksville.

Arkansas County Medical Society has elected Dr. M. C. John, Stuttgart, President; Dr. A. H. Fowler, Humphrey, Vice-President; and Dr. S. A. Drennen, Stuttgart, Secretary-Treasurer.

Ashley County Medical Society has elected Dr. M. C. Crandall, Wilmot, President; and Dr. L. C. Barnes, Hamburg, Secretary-Treasurer.

Benton County Medical Society has elected Dr. A. J. Harrison, Springdale, President; Dr. C. S. Wilson, Siloam Springs, Vice-President; and Dr. Geo. M. Love, Rogers, Secretary-Treasurer.

Dr. Geo. S. Atkinson, Morrilton, has moved to Florence, Colorado.

Dr. George C. Burton, Bald Knob, has moved to Ottawa, Illinois.

Dr. W. A. Snodgrass, Jr., El Dorado, has moved to 839 Donaghey Building, Little Rock.

Dr. H. E. Mobley, Morrilton, has been elected Vice-President of the local Chamber of Commerce.

Dr. Earle H. Hunt and Dr. G. R. Siegel, Clarksville, were appointed Co-chairmen for the Johnson County Red Cross Campaign.

Dr. Paul S. Lanier, Round Pond, has accepted an appointment as Resident to the Leo N. Levi Memorial Hospital, Hot Springs National Park.

Dr. Howell Brewer, Colonel, Medical Corps, U. S. Army, Hot Springs National Park, after a long period of service overseas, has been admitted to the Army and Navy General Hospital.

Dr. W. L. Shippey, Captain, Medical Corps, U. S. Army, Fort Smith, who has been in service overseas for the past year, is at Winter General Hospital, Topeka, Kansas.

Dr. James W. Lamb, Captain, Medical Corps, U. S. Army, Paragould, is stationed overseas.

Deaths

Dr. Elbert Amsden Bing, Marshall, aged 67, died recently.

Dr. George W. Hayman, Little Rock, aged 78, died recently of arteriosclerosis.

DISTRICT OF COLUMBIA

George Washington University School of Medicine, Washington, announces the seventh annual postgraduate course in ocular surgery, pathology and orthoptics from Monday, April 24, to Saturday, April 29, inclusive.

Dr. Hugh S. Cumming, Washington, Director, Pan American Sanitary Bureau and formerly Surgeon General, U. S. Public Health Service, was recently presented the William Freeman Snow Medal for "outstanding service in the field of social hygiene." The award was presented by Dr. Merritte W. Ireland, formerly Surgeon General, U. S. Army, during the annual dinner meeting of the American Social Hygiene Association.

Rear Admiral Ross T. McIntire, Washington, Surgeon General of the U. S. Navy, was recently promoted to the temporary rank of Vice-Admiral.

Dr. L. H. Reichelderfer, Washington, has been elected Second Vice-President of the Board of Directors, Garfield Memorial Hospital.

Dr. James Ross Veal, Washington, has resigned as Resident Chief Medical Officer in the Department of Surgery, Gallinger Municipal Hospital, to enter private practice.

Dr. Paul C. Barton, Washington, has been appointed Acting Executive Officer of Procurement and Assignment Service in place of Dr. M. E. Lapham, who is ill.

Dr. Stanley W. Geshall, Passed Assistant Surgeon, U. S. Public Health Service Reserve, formerly of Baltimore, Maryland, has been named Psychiatrist for the new Juvenile Court Clinic which was recently opened in Washington.

Dr. Marion T. Martin, Lieutenant-Commander, Medical Corps, U. S. Navy, formerly of Washington, was recently awarded the Silver Star Medal, for the evacuating of wounded personnel from Guadalcanal by air.

Dr. William R. Stovall, Washington, has been chosen Fellow in Aviation Medicine as announced by the Aero Medical Association of the United States.

Deaths

Dr. Francis V. Atkinson, Washington, aged 72, died recently.

Dr. Edward Max Knecht, Washington, aged 35, died recently.

FLORIDA

Lee County Medical Society has elected Dr. M. F. Johnson, President; Dr. C. G. Merrick, Vice-President; and Dr. W. A. Harrison, Secretary-Treasurer, all of Fort Myers.

Marion County Medical Society has elected Dr. Robbins Nettles, Ocala, President; Dr. H. Durham Young, Jr., Bushnell, Vice-President; and Dr. B. F. Drake, Ocala, Secretary-Treasurer.

Volusia County Medical Society has elected Dr. T. H. Dillard, DeLand, President; Dr. George M. Green, Daytona Beach, Vice-President; and Dr. Robert L. Miller, Daytona Beach, Secretary-Treasurer, re-elected.

Pasco-Hernando-Citrus County Medical Society has elected Dr. S. C. Harvard, Brooksville, President; Dr. P. J. Hudson, Crystal River, First Vice-President; Dr. J. T. Bradshaw, San Antonio, Second Vice-President; and Dr. G. R. Creekmore, Brooksville, Secretary-Treasurer.

Seminole County Medical Society has elected Dr. Samuel Puleston, Sanford, President; Dr. J. A. Smith, Homestead, Vice-President; and Dr. Leland H. Dame, Sebring, Secretary-Treasurer.

Palm Beach County Medical Society has elected Dr. James L. Carlisle, President; Dr. D. W. Martin, Vice-President; Dr. E. W. Stephens, Secretary; and Dr. W. C. Williams, Jr., Treasurer, re-elected, all of West Palm Beach.

Sarasota County Medical Society has elected Dr. O. H. Cribbins, President; Dr. T. W. Taylor, Vice-President; and Dr. J. E. Harris, Secretary-Treasurer, all of Sarasota.

Dr. Rosalie Slaughter Morton, Winter Park, a native of Lynchburg, Virginia, has presented to Lynchburg a three figure statue personifying "Vision," "Fortitude" and "Kindliness" to "The Sons and Daughters of Our City of the Hills." Dr. Morton supplemented her excellent medical and surgical work in this country with service abroad and was decorated by the French and Serbian Governments and the State of New York for distinguished patriotic service.

Dr. E. L. Huggins, DeFuniak Springs, was elected President recently of the Walton-Okaloosa County Medical Society. Other officers are Dr. R. B. Spires, DeFuniak Springs, Vice-President; and Dr. A. G. Williams, Lakewood, Secretary-Treasurer.

Florida State Board of Health has been conducting a statewide educational campaign against venereal disease under the auspices of Dr. Roger F. Sondag, Sarasota, the literature being distributed from house to house by defense block leaders.

Dr. Victor P. Genge, Director, Lake County Health Department, Tavares, has been appointed in charge of the Highlands-Glades Health Unit, succeeding Dr. Paul J. Coughlin, Sebring.

Dr. Herbert W. Virgin, Jr., Miami, has resumed practice after being ill for a period of two years.

Deaths

Dr. Frank Talmadge Barker, Tampa, aged 47, died recently of coronary thrombosis.

Dr. George Sidney Britten, DeFuniak Springs, aged 69, died recently of hemorrhage due to gastric ulcer.

Dr. Leslie Carlisle Fisher, Green Cove, aged 59, died recently of heart disease.

Dr. Samuel Goodwin Gant, Miami, aged 69, died recently of pneumonia.

Dr. James M. Hoffman, Pensacola, aged 44, died January 19, following a heart attack.

Dr. Clement Colfax Whitcomb, St. Petersburg, aged 75, died recently.

GEORGIA

Medical Association of Georgia will hold its next annual meeting at Savannah, May 9-12.

Bartow County Medical Society has elected Dr. S. M. Howell, President; Dr. W. E. Wofford, Vice-President; and Dr. A. L. Horton, Secretary-Treasurer, all of Cartersville.

Bibb County Medical Society has installed Dr. A. M. Phillips, Macon, President; and elected Dr. J. B. Kay, Byron, President-Elect; Dr. W. W. Baxley, Macon, Vice-President; and Dr. R. W. Edenfield, Macon, Secretary-Treasurer.

Bulloch-Chandler-Evans Counties Medical Society has elected Dr. R. L. Kennedy, President; and Dr. W. E. Simmons, Secretary-Treasurer, both of Metter.

Clayton-Fayette Counties Medical Society has elected Dr. J. R. Wallis, Lovejoy, President; and Dr. T. J. Busey, Fayetteville, Secretary-Treasurer.

Dougherty County Medical Society has elected Dr. Phil E. Roberson, President; Dr. J. A. Redfern, Vice-President; and Dr. I. M. Lucas, Secretary-Treasurer, all of Albany.

Thomas County Medical Society has elected Dr. Herbert F. Readling, Thomasville, President; Dr. J. N. Isler, Meigs, Vice-President; and Dr. Mary J. Erickson, Thomasville, Secretary-Treasurer.

Walker-Catoosa-Dade Counties Medical Society has elected Dr. F. L. O'Connor, Rossville, President; Dr. D. W. Hammond, LaFayette, Vice-President; and Dr. P. M. Golley, LaFayette, Secretary-Treasurer.

Warren County Medical Society has elected Dr. H. B. Cason, President; Dr. F. L. Ware, Vice-President; and Dr. A. W. Davis, Secretary-Treasurer, all of Warrenton.

Whitfield County Medical Society has elected Dr. C. F. Engelking, President; Dr. Jas. R. Whitley, Vice-President; and Dr H. J. Ault, Secretary-Treasurer, all of Dalton.

Wilcox County Medical Society has elected Dr. V. L. Harris, Rochelle, President; and Dr. S. B. Ellis, Pitts, Secretary-Treasurer.

Dr. Robert C. Major has resigned as Assistant in Surgery, Emory University School of Medicine, Atlanta, to become full time Professor of Thoracic Surgery, University of Georgia School of Medicine, Augusta.

University of Georgia School of Medicine, Augusta, has appointed Dr. John Robt. Rinker, Fort Worth, Texas, as fulltime Professor of Urology.

Dr. Robert Morris Paty, Porterdale, has been appointed Associate Dean, Emory University School of Medicine, and Medical Director, Emory University Hospital, Atlanta.

Coker's Hospital, Canton, has added Dr. James Mashburn to its staff.

Dr. James E. Paullin, Atlanta, has been appointed to assist in a survey of the Navy manpower group, and to study Naval hospitals and dispensaries of the Sixth Naval District.

Dr. L. P. Holmes, Augusta, has been elected Director, Physicians and Dentists Business Bureau.

Dr. Jas. L. Pittman, Atlanta, has been elected President of the Medical Staff, Emory University School of Medicine for 1944.

Deaths

Dr. Hulett Hall Askew, Atlanta, aged 51, died February 20 following a heart attack.

Dr. Novatus Lee Barker, West Point, aged 79, died recently.

Dr. Edwin J. Dorminy, Fitzgerald, aged 76, died recently following a laminectomy.

Dr. Rufus Lynn Grier, Lumpkin, aged 77, died recently.

Dr. Roy Albert Hill, Thomasville, aged 54, died recently of coronary thrombosis.

Dr. Thomas Hill Stewart, Jr., Eastman, aged 51, died recently.

Dr. Henry Richmond Slack, LaGrange, aged 81, died recently.

Dr. Leon R. McCrummen, LaGrange, aged 63, died recently.

Dr. James F. Webb, Decatur, aged 95, died recently of chronic heart disease.

KENTUCKY

Bracken-Pendleton County Medical Society has elected Dr. O. W. Brown, Foster, President; Dr. J. M. Stevenson, Brooksville, Vice-President; and Dr. W. A. McKenney, Falmouth, Secretary-Treasurer.

Daviess County Medical Society has elected Dr. G. W. Disbrow, Owensboro, President; Dr. Wm. L. Woolfolk, Owensboro, Vice-President; and Dr. Frank J. Condon, Secretary-Treasurer.

Grant County Medical Society has elected Dr. J. J. Marshall, Crittenden, President; Dr. C. M. Eckler, Williamstown, Vice-President; and Dr. Wallace Byrd, Owenton, Secretary-Treasurer.

Harlan County Medical Society has elected Dr. D. M. Blanton, President; Dr. J. W. Nolan, Vice-President; and Dr. W. R. Parks, Secretary, all of Harlan.

Hopkins County Medical Society has elected Dr. C. B. Johnson, Earlington, President; Dr. I. J. Townes, Madisonville, Vice-President; and Dr. Wm. H. Garner, Madisonville, Secretary-Treasurer.

Knox County Medical Society has elected Dr. B. P. Jones, President; Dr. R. B. Fulks, Vice-President; and Dr. T. R. Davies, Secretary-Treasurer, all of Barbourville.

Lyon County Medical Society has elected Dr. T. L. Phillips, Kuttawa, President; Dr. C. P. Moseley, Eddyville, Vice-President; and Dr. H. H. Woodson, Eddyville, Secretary-Treasurer.

Muhlenberg County Medical Society has elected Dr. Claude Wilson, Greenville, President; Dr. J. H. Harralson, Central City, Vice-President; and Dr. E. L. Gates, Greenville, Secretary-Treasurer.

Nelson County Medical Society has elected Dr. W. Keith Crume, Bardstown, President and Secretary-Treasurer; and Dr. Henry S. Harned, Boston, Vice-President.

Perry County Medical Society has elected Dr. Z. M. Absbear, Buckhorn, President; Dr. Charles Dana Snyder, Hazard, Vice-President; and Dr. J. P. Boggs, Hazard, Secretary-Treasurer.

Clay County Medical Society has elected Dr. D. D. Turner, Manchester, President; Dr. G. P. Webb, Burning Springs, Vice-President; and Dr. L. H. Wagers, Manchester, Secretary-Treasurer.

Garrard County Medical Society has elected Dr. B. B. Montgomery, President; Dr. J. L. Hart, Vice-President; and Dr. J. E. Edwards, Secretary-Treasurer, all of Lancaster.

Union-Medico-Dental Society has elected Dr. C. B. Graves President; and Dr. D. L. Vaughn, Vice-President, both of Morganfield.

Rockcastle County Medical Society has elected Dr. R. H. Lewis, Wildie, President; Dr. J. F. Pennington, Mt. Vernon, Vice-President; and Dr. R. G. Webb, Livingston, Secretary.

Rowan County Medical Society has elected Dr. T. A. E. Evans, Farmers, President; and Dr. I. M. Garred, Morehead, Secretary.

Dr. Irvin Abell, Jr., Captain, Medical Corps, U. S. Army, Louisville, has returned from his duties in Iran, later reporting to Billings General Hospital, Fort Benjamin Harrison, Indiana, and has been assigned to Nichols General Hospital, Louisville.

Kentucky State Medical Association has appointed a committee of three to present the needs for two tuberculosis sanatoriums in the state in a bill to the Legislature asking for appropriations: Dr. Carl Norfleet, Somerset, representing Central Kentucky; Dr. William Clark Bailey, Harlan, representing Eastern Kentucky; and Dr. Carl C. Howard, Glasgow, representing Western Kentucky.

Dr. Wilson S. F. Dodd, Berea, Medical Director, Near East Foundation, has charge of a tent city housing 45,000 evacuees from Germany occupied Yugoslavia, which is situated at El Shatt.

Dr. R. Glen Spurling, Lieutenant Colonel, Medical Corps, U. S. Army, Louisville, formerly stationed at Walter Reed Hospital, Washington, D. C., has been assigned for overseas duty as Senior Consultant on headquarters staff in neurological surgery in the European theater of war.

Dr. J. Keller Mack, Major, Medical Corps, U. S. Army, Louisville, is in the Office of the Surgeon General, Washington, D. C.

Dr. George S. Coon and Dr. Clarence Davis, both of Louisville, have been appointed members of the State Board of Health.

Dr. Samuel L. Andelman, Paintsville, has been appointed in charge of the Johnson County Health Department, succeeding Dr. Edward W. Kissel, resigned, also of Paintsville.

Dr. William G. Morgan is Director of the Clark County Health Department, Winchester.

Dr. James H. Wells, Pineville, has resigned as Health Officer of Bell County.

Deaths

Dr. John W. Conklin, Leitchfield, aged 85, died recently of senility.

Dr. D. H. Godsey, Hartford, aged 73, died recently of angina pectoris.

Dr. Clarence William Kash, Carlisle, aged 59, died recently of coronary sclerosis.

Dr. William Jasper Shelton, Mayfield, aged 71, died recently in an automobile accident.

Dr. Charles Robert Slater, Erlanger, aged 84, died February 5.

LOUISIANA

Claiborne Parish Medical Society has elected Dr. C. O. Wolff, Haynesville, President; Dr. E. B. Middleton, Homer, Vice-President; and Dr. M. J. Rivenbark, Haynesville, Secretary-Treasurer.

East Baton Rouge Parish Medical Society has elected Dr. Henry C. Hatcher, President; Dr. Arthur D. Long, Vice-President; and Dr. Felix Boizelle, Secretary-Treasurer, all of Baton Rouge.

Jefferson Davis Parish Medical Society has elected Dr. Morgan Smith, Jennings, President; Dr. John McClure, Welsh, Vice-President; and Dr. L. E. Shirley, Jennings, Secretary-Treasurer.

Ouachita Parish Medical Society has elected Dr. Irma Jones, President; Dr. G. A. Varino, Vice-President; and Dr. Zelma Alden, Secretary-Treasurer, all of Monroe.

Beauregard Parish Medical Society has elected Dr. Luke Marcello, President; Dr. Sam T. Roberts, Vice-President; and Dr. Thomas R. Sartor, Secretary-Treasurer, all of DeRidder.

Bi-Parish Medical Society has elected Dr. M. A. Walker, Angola, President; Dr. E. M. Robards, Jackson, Vice-President; and Dr. E. M. Toler, Clinton, Secretary-Treasurer.

Pointe Coupee Parish Medical Society has elected Dr. J. W. Plauche, Jr., Morganza, President; Dr. J. M. Mosely, New Roads, Vice-President; and Dr. F. F. Rougon, New Roads, Secretary-Treasurer.

Jackson-Lincoln-Union Parish Medical Society has elected Dr. T. A. Dekle, Jonesboro, President; Dr. J. M. Johnson, Ruston, Vice-President from Lincoln Parish; Dr. J. F. Tanner, Bernice, Vice-President from Union Parish; and Dr. J. J. Bennett, Ruston, Secretary-Treasurer.

Dr. Herbert Derman, a member of the senior class of the Louisiana State University School of Medicine, New Orleans, was recently presented with the Hull Award during the annual banquet of the Louisiana State University Society of Medical Sciences, the recipient being selected on the basis of scholastic attainments.

New officers of the staff of Hotel Dieu, New Orleans, are: Dr. S. Chaille Jamison, President; Dr. Frank Chetta, Vice-President; Dr. Henry Larose, Secretary-Treasurer. Executive Committee, Dr. J. M. Perrett and Dr. H. T. Beacham for three years; Dr. John S. Couret and Dr. Gilbert C. Anderson for two years; and Dr. Edmond Souchon, Dr. E. A. Socola and Dr. George J. Taquino for one year.

Mercy Hospital Staff, New Orleans, has installed Dr. R. J. Mailhes, President; Dr. Charles Gelbke, Vice-President; Dr. Gordon Johnson, Secretary; and Dr. O. J. Burger, Treasurer.

Deaths

Dr. Charles L. Hope, Oak Ridge, aged 81, died recently of coronary occlusion.

Dr. Walter Ovid McCammon, New Orleans, died recently in Italy while fighting with the American troops.

Dr. Finley Van Orsdall, Baton Rouge, aged 69, died recently of cerebral hemorrhage.

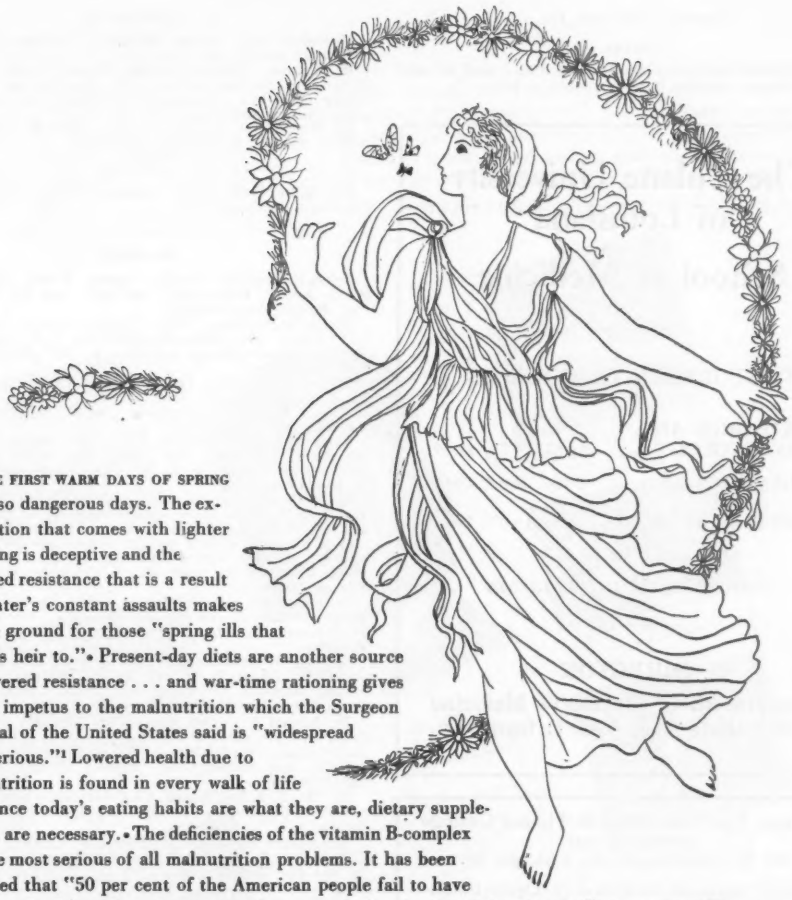
MARYLAND

Allegany-Garrett County Medical Society has elected Dr. C. C. Zimmermann, President; Dr. L. H. Corson, Vice-President; Dr. S. M. Jacobson, Secretary; and Dr. C. E. Durrett, Treasurer, all of Cumberland.

Baltimore County Medical Association has elected Dr. D. D. Caples, Reistertown, President; Dr. R. M. Chapman, Towson, Vice-President; and Dr. W. R. Dunton, Catonsville, Secretary-Treasurer.

Dr. Harold R. Bohlman, Baltimore, is President of the Aero Medical Association of the United States.

Continued on page 56



THOSE FIRST WARM DAYS OF SPRING are also dangerous days. The exhilaration that comes with lighter clothing is deceptive and the lowered resistance that is a result of winter's constant assaults makes fertile ground for those "spring ills that flesh is heir to." • Present-day diets are another source of lowered resistance . . . and war-time rationing gives added impetus to the malnutrition which the Surgeon General of the United States said is "widespread and serious."[1] Lowered health due to malnutrition is found in every walk of life and since today's eating habits are what they are, dietary supplements are necessary. • The deficiencies of the vitamin B-complex are the most serious of all malnutrition problems. It has been reported that "50 per cent of the American people fail to have optimum health and maximum vigor because of a low intake of the vitamin B components."[2] • In order to combat those deficiencies, an effective supplement, containing all the important B factors, is the preparation you should choose. And Elixir 'B-G-Phos' proved definitely useful in the prevention or treatment of the most widespread type of vitamin deficiency, namely that of the B-complex.

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1. Parran, T.; J. Pediatrics, Ded. 1941. 2. South. Med. J., 34:161, 1941.

Elixir 'B-G-Phos' is supplied in pint and gallon bottles and provides all the elements of the vitamin B-complex with glycerophosphates of calcium, manganese, sodium and potassium. This exceptionally palatable elixir is noted for its stimulating effect on the appetite. Each fluidounce contains:

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elixir 'B·G·PHOS'

Continued from page 250

DEATHS

Dr. Frederick William Steiner, Havre de Grace, aged 65, died recently of injuries received in an automobile accident.

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MISSISSIPPI

Mississippi State Medical Association will hold its next annual meeting at Jackson, May 9-10.

Dr. Norman Friedman, Captain, Medical Corps, U. S. Army, formerly of Hattiesburg, has been awarded the Distinguished Service Cross "for extraordinary heroism in the face of intense enemy fire on New Georgia Island."

Dr. Woodrow W. Lovell, Columbus, and Miss Carolyn Howell, Atlanta, Georgia, were married recently.

DEATHS

Dr. Miller Craft Henry, Georgetown, aged 60, died recently following a pneumonectomy.

MISSOURI

Dallas-Hickory-Polk County Medical Society has elected Dr. R. C. Nevins, Humansville, President; and Dr. G. C. Plummer, Buffalo, Vice-President.

Howell-Oregon-Texas County Medical Society has elected Dr. E. C. Bohrer, West Plains, President; Dr. C. F. Callihan, Willow Springs, Vice-President; and Dr. L. M. Dillman, Houston, Secretary-Treasurer.

Barry-Lawrence-Stone County Medical Society has elected Dr. W. A. Kenneth Glover, Mount Vernon, President; Dr. Lewis H. Ferguson, Monett, Vice-President; and Dr. George W. Newman, Cassville, Secretary-Treasurer.

Lafayette County Medical Society has installed Dr. W. A. Braecklein, President; and elected Dr. W. E. Koppenbrink, President-Elect; and Dr. L. M. Garner, Secretary-Treasurer, all of Higginsville.

South Central Counties Medical Society at its recent meeting was divided into the Howell-Oregon-Texas County Medical Society and the Wright-Douglas County Medical Society.

Wright-Douglas County Medical Society has elected Dr. R. W. Denney, Mountain Grove, President; Dr. L. T. Van Noy, Norwood, Vice-President; and Dr. A. C. Ames, Mountain Grove, Secretary-Treasurer.

Ste. Genevieve County Medical Society has elected Dr. A. E. Sexauer, President; Dr. C. J. Clapsaddle, Vice-President; and Dr. Robert W. Lanning, Secretary-Treasurer, all of Ste. Genevieve.

Nodaway-Atchison-Gentry-Worth Counties Medical Society has elected Dr. Claude D. Haskell, Tarkio, President; Dr. Robert C. Person, Maryville, Vice-President; and Dr. Charles D. Humberd, Barnard, Secretary-Treasurer.

Dr. Edward J. Curran, Kansas City, Professor and head of the Department of Ophthalmology of the University of Kansas Medical School, has given $10,000 to the school to provide equipment, material and assistance for research in the Department of Ophthalmology.

Dr. W. E. Keith, Kansas City, has been elected an honorary member of the Reading (Pennsylvania) Eye, Ear, Nose and Throat Society.

Dr. Edward H. Hashinger, Lieutenant Colonel, Medical Corps, U. S. Army, Kansas City, has returned from North Africa where he was the Medical Director of the 77th Evacuation Hospital Unit.

Dr. Carl V. Moore, St. Louis, was re-elected Secretary-Treasurer of the Central Society for Clinical Research at a meeting held in Chicago recently.

Dr. Frank H. Hodgson, Kansas City, was elected President of the Metro Club for 1944, a civic organization.

Dr. William J. Shaw, Lieutenant Colonel, Medical Corps, U. S.

Continued on page 58

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Continued from page 56

Army, Division Surgeon of the 41st Division of the U. S. Army in Australia, formerly of Fayette, has been awarded the Legion of Merit decoration for outstanding service in New Guinea.

Deaths

Dr. William R. Arthur, Kinlock, aged 75, died recently of hypertensive cardiovascular disease.

Dr. Frank R. Atkins, Caruthersville, aged 84, died recently of senility.

Dr. Fred Eugene Butler, Salem, aged 40, died recently of myocarditis.

Dr. Lee Wallace Dean, St. Louis, aged 70, died recently of coronary occlusion.

Dr. Edgar Lee Gardner, St. Joseph, aged 61, died recently of pulmonary tuberculosis.

Dr. Theodore Carl Hempelmann, St. Louis, aged 58, died recently of coronary thrombosis.

Dr. J. F. Roberts, Bolivar, aged 93, died February 10.

Dr. Oscar Legier Perkins, Clarksdale, aged 76, died recently.

Dr. Spence Redman, Platte City, aged 81, died recently.

Dr. Ralph Edgar Niedringhaus, St. Louis, aged 66, died recently.

Dr. Albert Ernest Taussig, St. Louis, aged 72, died recently of carcinoma of the colon with metastasis to liver and lungs.

Dr. Joseph M. Trigg, St. Louis, aged 73, died recently.

NORTH CAROLINA

Medical Society of the State of North Carolina will hold its ninety-first annual meeting at Pinehurst, May 1-3.

Dr. Fred W. Ellis, formerly Associate in Pharmacology, Jefferson Medical College, Philadelphia, Pennsylvania, has been appointed Assistant Professor of Pharmacology in the University of North Carolina School of Medicine, Chapel Hill.

Dr. Derwin Cooper has accepted the medical superintendency of the Durham County Sanatorium, which was recently opened with a sixty-bed capacity to white and colored.

Dr. John LaBruce Ward, Asheville, has been elected a member of the State Board of Medical Examiners to fill the unexpired term of the late Dr. Lewis W. Elias.

Dr. William Ross Cameron, Portsmouth, has been appointed Health Officer for Charlotte.

Dr. Joseph E. Markee, Ph.D., formerly Professor of Anatomy, Stanford University School of Medicine, San Francisco, California, has been made Professor and head of the Department of Anatomy, Duke University School of Medicine, Durham.

Dr. William Jeffress Senter, Chalybeate Springs, and Miss Bettye Faye Ashcraft, Mobile, were married recently.

Dr. James T. Gianoulis, High Point, and Lieutenant Velma Holt, Algiers, Africa, were married recently.

Deaths

Dr. Thomas A. Boaz, Stoneville, aged 76, died recently of uremia.

Dr. Jesse Franklin Gamble, Lincolnton, aged 65, died recently of cerebral hemorrhage.

Dr. Thomas Clarence Johnson, Lumberton, aged 64, died recently of acute myocardial failure with coronary thrombosis.

Dr. Michel M. Saliba, Wilson, aged 68, died recently of heart disease and uremia.

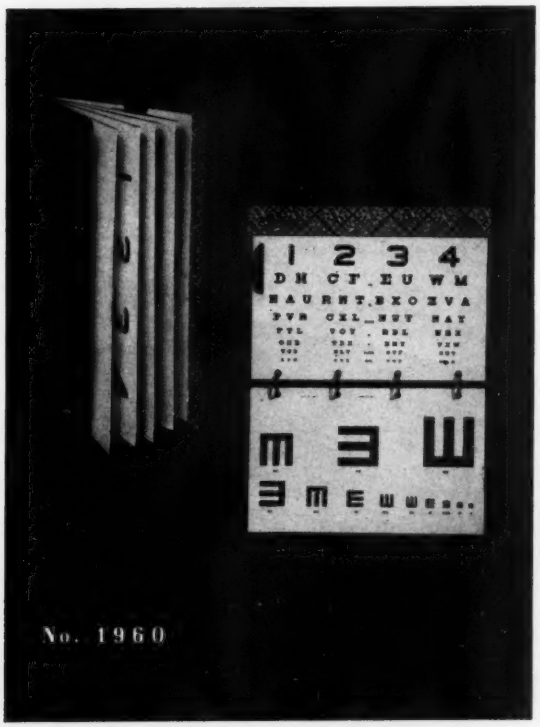
OKLAHOMA

Dr. Arthur A. Hellbaum has been named Professor of Pharmacology and Acting Chairman, Department of Pharmacology, University of Oklahoma School of Medicine, Oklahoma City.

Dr. John F. Hackler, recently associated with the Oklahoma State Health Department, has been appointed Professor of Hygiene and Public Health, University of Oklahoma School of Medicine.

Dr. John W. Cavanaugh, recently of Topeka, Kansas, has been appointed fulltime Professor of Surgery at the University of Oklahoma School of Medicine.

Continued on page 60



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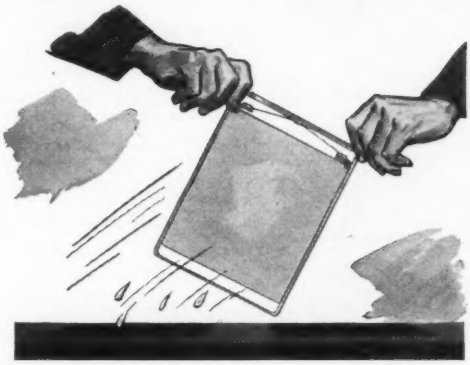
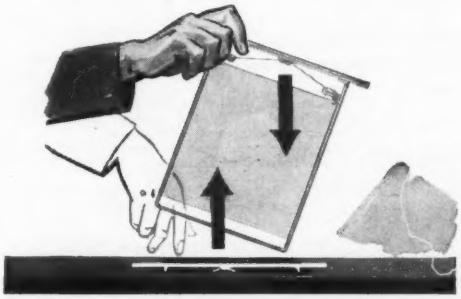
TIMELY TIPS ON HANDLING FILM



1. When taking the hangers from the developer, don't delay in getting them into the rinse. Don't, for example, take this opportunity to inspect the radiograph before the safelight. If you keep the film out of the solutions for any length of time at this stage, it may become stained or streaked as a result of aerial oxidation.



2. The reason for rinsing the film in water is to remove as much of the developer as possible. Therefore, change the water frequently or, preferably, rinse in a bath of running water. *Merely dipping the film in the water is not enough!* You've got to agitate it vigorously at least half a dozen times. (Many technicians use a short-stop bath of 2% acetic acid instead of the water rinse—with excellent results.)

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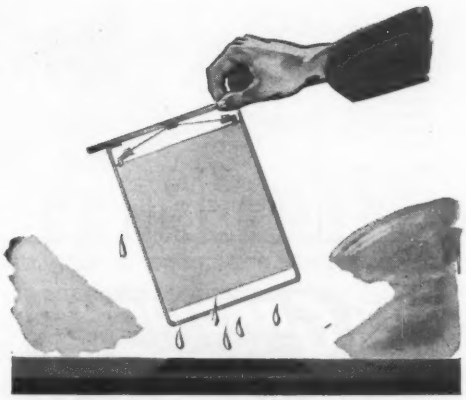

3. When transferring the film from the rinse to the fixing solution, try to carry over as little water as possible to avoid diluting the fixer. After you place the film in the fixer, agitate it for a few seconds. Allow the film to stay in the fixer twice the time it takes to clear. For example: if the film clears in three minutes, it should stay in the bath a total of 6 minutes. Don't turn on white light until the film has been in the fixer for at least a minute.
Watch for evidence of exhausted fixer. You can tell this by the appearance of foam on the surface or by a *bad odor*. Usually, a fixing solution is considered exhausted when it takes twice as long to clear film as when fresh. Follow these instructions carefully if you expect fine results. Remember: Incompletely fixed films deteriorate in storage.

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Continued from page 58

Dr. Mary V. S. Sheppard has recently been appointed Instructor in Medicine, University of Oklahoma School of Medicine.

Dr. Anderson Nettleship has been appointed Associate Professor of Pathology, University of Oklahoma School of Medicine, Oklahoma City. He formerly served as Passed Assistant Surgeon (R), U. S. Public Health Service, National Cancer Institute, Bethesda, Maryland.

Dr. J. O. Akins, Tulsa, Captain, Medical Corps, U. S. Army, who was wounded at Salerno, is now in a hospital in the United States.

Dr. W. T. Dunnington, Lieutenant Colonel, Medical Corps, U. S. Army, Cherokee, has returned to the United States after having spent two years overseas.

Dr. Roger Reid, Captain, Medical Corps, U. S. Army, Ardmore, is now in Atlantic City, New Jersey, where he is on duty at the England General Hospital.

DEATHS

Dr. James R. Grave, McLauchlin, Oklahoma City, aged 59, died recently of coronary occlusion.

Dr. Robert Eugene Pugh, Lawton, aged 32, died recently of nephritis and hypertension.

SOUTH CAROLINA

South Carolina Medical Association will hold its next annual meeting at Columbia, Columbia Hotel, April 11 and 12.

Dr. Ralph K. Foster, Columbia, is serving on a rating board at the Veterans Hospital in Columbia.

Charleston County Medical Society has elected Dr. Henry W. DeSaussure, President, Dr. M. W. Beach, Vice-President; and Dr. Robert Wilson, Jr., Secretary-Treasurer, all of Charleston.

Florence County Medical Society has elected Dr. Frank Davenport, Timmonsville, President; Dr. George Dawson, Florence, Vice-President; Dr. J. H. Stokes, Florence, Secretary-Treasurer.

Mingo County Medical Society has elected Dr. George W. Easley, President; Dr. G. B. Irvine, Vice-President; and Dr. John Carl Lawson, Secretary-Treasurer, all of Williamson.

Newberry County Medical Society has elected Dr. V. A. Long, Prosperity, President; Dr. A. T. Neely, Newberry, Vice-President; and Dr. J. C. Sease, Newberry, Secretary-Treasurer.

Dr. Frederick E. Kredel, Charleston, was elected Treasurer of the Society of University Surgeons at its recent meeting held in Nashville, Tennessee.

Dr. M. D. Wheatley, a graduate of the University of Kansas, has joined the faculty of the Medical College of the State of South Carolina in the Department of Anatomy.

Dr. Isadore Schayer, Columbia, has been retired from the army and has returned to his duties as Professor of Hygiene, University of South Carolina.

Dr. Herman Stanley Parish, Jr., Manning, and Miss Virginia Ballentine, Anderson, were married recently.

DEATHS

Dr. Adville Crosswell Baskin, Bishopville, aged 72, died recently of neoplasm of the brain.

Dr. William O. Holloway, Chappels, aged 69, died recently of coronary thrombosis.

Continued on page 62

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Continued from page 60

Dr. Clarendon E. Oxner, Columbia, aged 44, died recently.

Dr. Theron Otis Walker, Greer, aged 52, died recently of myocardial failure following cerebral embolism.

TENNESSEE

The sixth annual meeting of the Society of University Surgeons was held at the Vanderbilt University Hospital, Nashville February 10-12. The 1945 meeting will be held in New York City.

Dr. James A. Crabtree, a graduate of the University of Tennessee School of Medicine, Memphis, in 1925 and with the U. S. Public Health Service, Washington, D. C., has been appointed acting Chief of the Health Division of the United Nations Relief and Rehabilitation Administration.

Madison County Medical Society has elected Dr. Leland Johnston, Jackson, President; Dr. Henry N. Moore, Bemis, Vice-President; and Dr. Stanford Herron, Jackson, Secretary.

Methodist Hospital staff, Memphis, recently elected Dr. Giles A. Coors, President; Dr. M. W. Adams, Vice-President; and Dr. W. D. Mims, Secretary.

Dr. Cobb Pilcher, Nashville, was named President-Elect of the Society of University Surgeons at its recent meeting held in Nashville.

Dr. Richard H. Meade, Jr., Medical Corps, A. U. S., Kennedy General Hospital, Memphis 15, is Secretary of the American Association for Thoracic Surgery which will hold its twenty-fifth annual meeting at the Drake Hotel, Chicago, Illinois, May 5-6.

Dr. Solomon J. Axelrod has resigned as Director, Division of Preventable Diseases of the Chattanooga and Hamilton County Department of Health to accept a commission as Passed Assistant Surgeon in the U. S. Public Health Service.

Dr. William L. Phillips, Centerville, has been named Director, Obion-Lake Health District, succeeding Dr. George W. James, Farner, who has accepted a position with the New York State Department of Health.

The Carrol Turner Sanatorium, Memphis, formerly known as the Turner-Gotten Sanatorium, is now owned by Dr. Carrol C. Turner, he having bought the interest in the sanatorium of Dr. Nicholas Gotten.

Dr. J. A. Crisler, Lieutenant Colonel, Medical Corps, U. S. Army, Memphis, was last reported to be in England.

DEATHS

Dr. William Val Sanford, Ripley, aged 49, died in Jannary somewhere in Italy.

Dr. Jesse Franklin Goff, Lexington, aged 59, died recently.

Dr. Ferris Albert Niles, Crab Orchard, aged 69, died recently of pneumonia.

TEXAS

State Medical Association of Texas will hold its next annual meeting at Dallas, May 10-11.

Angelina County Medical Society has elected Dr. T. A. Taylor, Lufkin, President; Dr. J. R. Dale, Diboll, Vice-President; and Dr. B. H. Denman, Lufkin, Secretary-Treasurer.

Brown-Comanche-Mills-San Saba Counties Medical Society has elected Dr. Roy G. Hallum, President; Dr. C. C. Bullard, Vice-President; and Dr. H. L. Locker, Secretary, all of Brownwood.

Cameron-Willacy Counties Medical Society has elected Dr. Troy A. Shafer, Harlingen, President; Dr. G. Earl Allen, Harlingen, Vice-President; and Dr. Morton L. Mazer, Dallas, Secretary-Treasurer.

Childress-Collingsworth-Hall Counties Medical Society has elected Dr. E. W. Moss, Wellington, President; Dr. E. W. Jones, Wellington, Dr. P. R. Jeter, Childress, and Dr. J. A. Odom, Memphis, Vice-Presidents; and Dr. C. B. Jones, Wellington. Secretary-Treasurer.

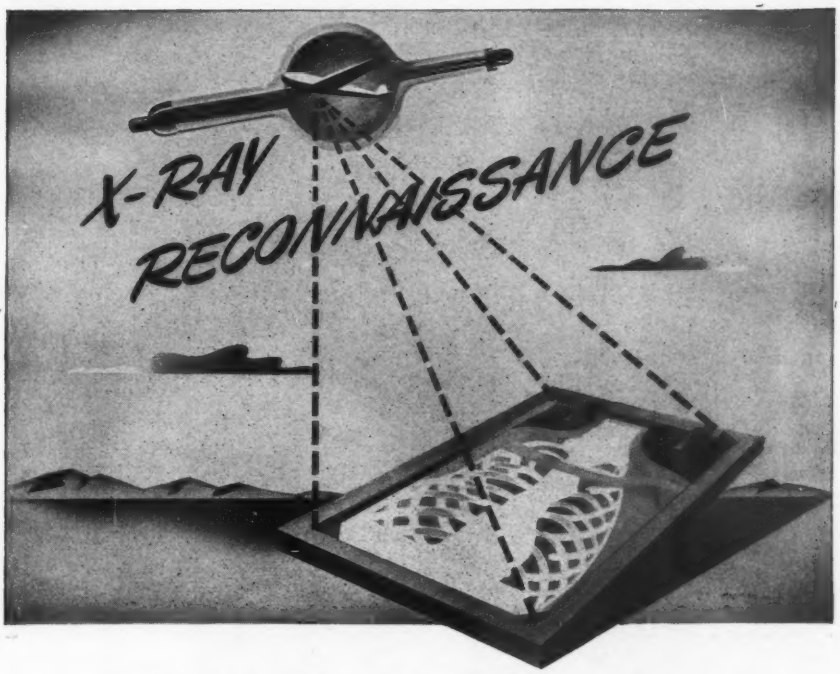
Dawson-Lynn-Terry-Gaines-Yoakum Counties Medical Society has elected Dr. John Turner, Brownfield, President; Dr. L. D. Richards, Seminole, Vice-President; and Dr. Andrew S. Tomb, Secretary.

Galveston County Medical Society has elected Dr. Emil H. Klatt, Galveston, President; Dr. Joseph C. Magliolo, Dickinson, Vice-President; and Dr. George S. McReynolds, Galveston, Secretary-Treasurer.

Gray-Wheeler Counties Medical Society has elected Dr. G. R. Walker, Wheeler, President; Dr. K. W. Pieratt, Dalhart, and Dr. Joe Ziegler, Vice-President; and Dr. H. L. Wilder, Pampa, Secretary-Treasurer.

Harris County Medical Society has installed Dr. Hugh C. Welsh, President; and elected Dr. T. R. Hannon, President-Elect; Dr. L. L. D. Tuttle, Secretary, re-elected; and Dr. McDonald Orman, Treasurer, all of Houston.

Continued on page 66



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Consider x-ray, the modern weapon. Radiographs . . . like aerial views from a front-line reconnaissance flight . . . reveal the character of "enemy" positions. They permit of planned approach . . . remove uncertainty and provide a sound basis for successful attack.

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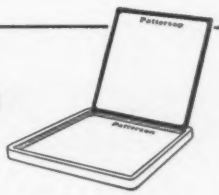

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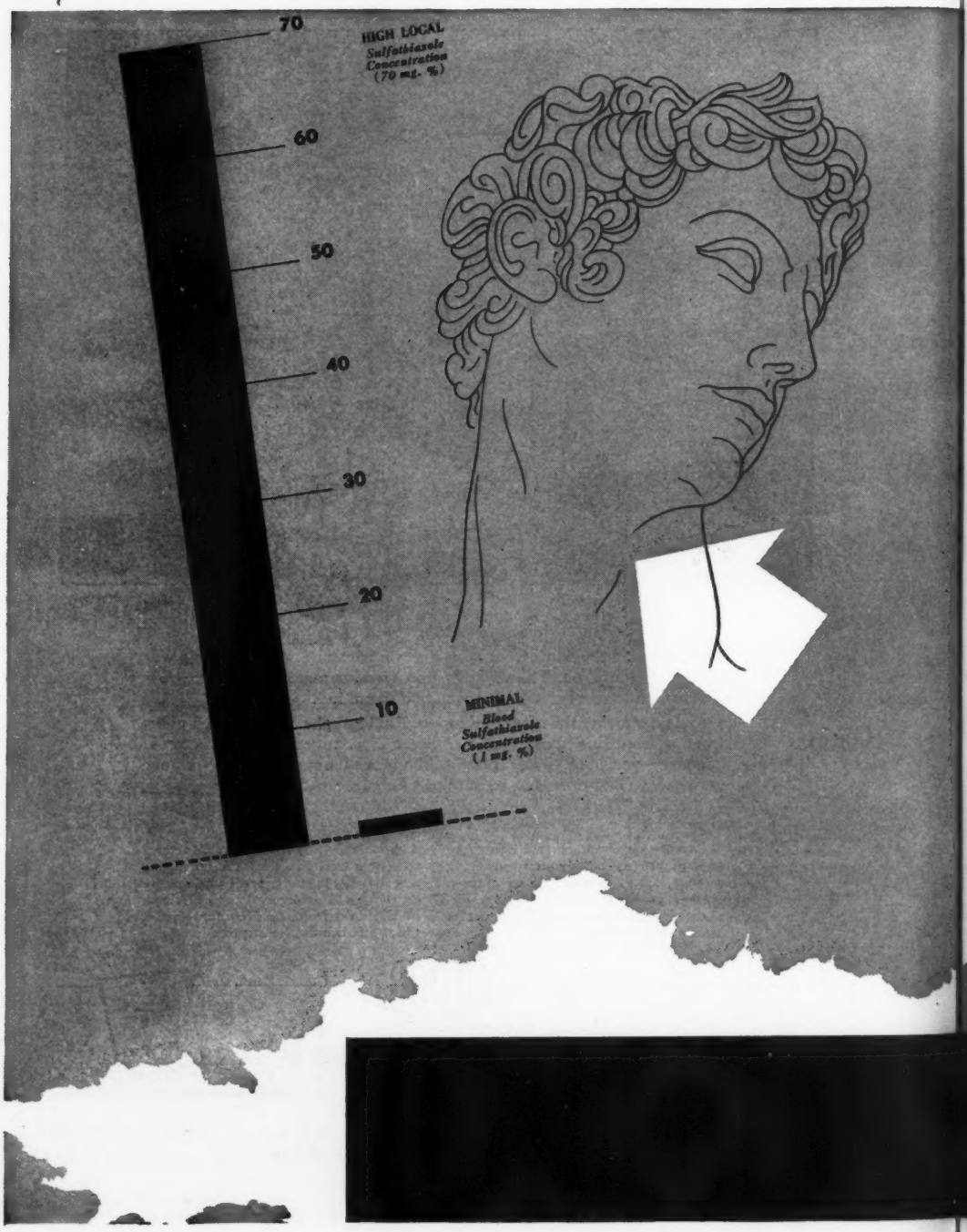
70
60
50
40
30
20
10
HIGH LOCAL
Sulfathiazole
Concentration
(70 mg. %)
MINIMAL
Blood
Sulfathiazole
Concentration
(1 mg. %)

In throat infections...

SULFATHIAZOLE WHERE IT'S NEEDED

TO obtain the topical effect of sulfathiazole in certain infections of mouth and throat, without risk of untoward systemic reactions, White's Sulfathiazole Gum offers the advantages of convenience, palatability and effectiveness.

One White's Sulfathiazole Gum Tablet chewed for one-half to one hour promptly initiates a *high* salivary concentration of *locally active* (dissolved) sulfathiazole and *maintains* throughout the maximum chewing period an average topical concentration of 70 mg. per cent.

This high local concentration is accomplished despite the fact that blood levels of sulfathiazole are extremely low and for the most part not quantatively measurable.

Indications: Septic sore throat; acute tonsillitis, pharyngitis; infectious gingivitis and stomatitis caused by sulfathiazole-susceptible micro-organisms; prevention of local infection secondary to oral and pharyngeal surgery (e.g. tonsillectomy).

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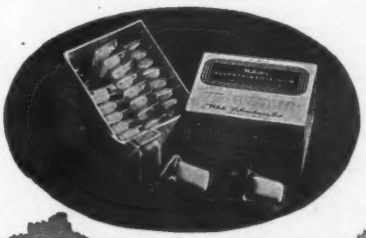

White's Sulfathiazole Gum

Continued from page 62

Hays-Blanco Counties Medical Society has elected Dr. York Lancaster, President; Dr. J. M. Van Ness, San Marcos, Vice-President; and Dr. J. R. de Stiguer, San Marcos, Secretary-Treasurer.

Henderson County Medical Society has elected Dr. A. C. Horton, Brownsboro, President; and re-elected Dr. D. Price, Secretary-Treasurer.

Hidalgo-Starr Counties Medical Society has elected Dr. Kinsey Scott, President; Dr. T. W. Glass, Weslaco, Vice-President; and Dr. R. E. Hamme, Edinburg, Secretary-Treasurer.

Hill County Medical Society has elected Dr. Richard Beskow, President; Dr. Ben C. Smith, Vice-President; and Dr. J. E. Boyd, Secretary-Treasurer, all of Hillsboro.

Hutchinson-Carson Counties Medical Society has elected Dr W. C. Barksdale, President; Dr. L. C. Hansen, Vice-President; and Dr. M. M. Stephens, Secretary, all of Borger.

Jefferson County Medical Society has elected Dr. I. T. Young, Port Arthur, President; Dr. T. C. Walker, Beaumont, Vice-President; and Dr. L. R. Byrd, Secretary-Treasurer.

Lavaca County Medical Society re-elected Dr. C. T. Dufner, Hallettsville, President; Dr. R. W. Williams, Shiner, Vice-President; and Dr. James W. Boyle, Jr., Shiner, Secretary-Treasurer.

Navarro County Medical Society has elected Dr. E. H. Newton, President; Dr. O. C. Bowmer, Vice-President; and Dr. J. Wilson David, Secretary-Treasurer, all of Corsicana.

Nueces County Medical Society has elected Dr. G. Turner Moller, President; Dr. J. F. Pilcher, Vice-President; and Dr. R. V. St. John, Secretary-Treasurer, all of Corpus Christi.

Orange County Medical Society has elected Dr. T. O. Woolley, Brenham, President; Dr. E. C. Schofield, Vice-President; and Dr. J. W. Clark, Secretary-Treasurer.

Palo Pinto-Parker Counties Society has elected Dr. Edward Johnson, President; Dr. E. F. Yeager, Mineral Wells, Vice-President; and Dr. W. B. Lasater, Mineral Wells, Secretary-Treasurer.

Potter County Medical Society has elected Dr. W. R. Klingensmith, President; Dr. Norman C. Prince, Vice-President; and Dr. Nan Gilkerson, Secretary-Treasurer, all of Amarillo.

Taylor-Jones Counties Medical Society has elected Dr. L. F. Johnson, Abilene, President; Dr. W. A. V. Cash, Abilene, Vice-President; and Dr. J. C. Duff, Anson, Secretary-Treasurer.

Travis County Medical Society has elected Dr. H. A. Scott, President; Dr. J. M. Coleman, Vice-President; and Dr. L. F. Holland, Secretary-Treasurer, all of Austin.

Wichita County Medical Society has elected Dr. J. A. Heyman, President; Dr. Bailey Collins, Vice-President; and Dr. Roger W. Manar, Secretary, all of Wichita Falls.

Wood County Medical Society has elected Dr. A. A. McDaniel, President; Dr. R. E. Burrus, Picton, Vice President; and Dr. V. E. Robbins, Quitman, Secretary-Treasurer.

Brazoria County Medical Society has elected Dr. George D. Reeves, Freeport, President; Dr. G. J. Hays, Vice-President; and Dr. Brooks Stafford, Angleton, Secretary.

Guadalupe County Medical Society has elected Dr. J. C. B. Douthett, Sequin, President; Dr. N. A. Poth, Sequin, Vice-President; and Dr. W. H. Mannheimer, Secretary.

San Patricio-Aransas-Refugio Counties Medical Society has elected Dr. R. S. Knapp, Aransas Pass, President; Dr. A. H. Voss, Odem, Vice-President; and Dr. C. L. Curlee, Sinton Secretary-Treasurer.

Dr. Kenneth L. Burdon, Ph.D., formerly Assistant Professor of Immunology and Bacteriology, Louisiana State University School of Medicine, New Orleans, Louisiana, has been appointed Professor of Bacteriology, Baylor University College of Medicine, Houston.

Methodist Hospital Staff, Houston, has elected Dr. A. N. Boyd, President; Dr. George Waldron, President-Elect; Dr. John T. Stough, Vice-President; and Dr. L. L. Handley, Secretary, re-elected.

Bethania Hospital Staff, Wichita Falls, has elected Dr. F. R. Landon, President; Dr. Bailey R. Collins, Vice-President; Dr. J. A. Little, Secretary; and Dr. G. T. Singleton, Assistant Secretary. Executive Board members are Dr. J. A. Heymann, Dr. Joe E. Kanatser and Dr. W. G. Harrison.

Dr. F. W. Janes, Olton, has purchased the equipment of the late Dr. Roy E. Hunt and Dr. Thomas B. Duke in the Littlefield Hospital, and will be associated with Dr. J. R. Coen in the operation of the hospital.

Holt Hospital and Clinic, Meridian, is being enlarged. It was opened in Meridian in 1940 by Dr. Russell D. Holt.

Scott and White Hospital, Temple, is now conducting and operating directly its own Department of Ophthalmology and

Continued on page 68

IN THE DIGESTIVE DISTURBANCES OF THE AGED

Cholmodin

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Intestinal Activation and Improved Fat-Digestion

Intolerance to fatty foods, due to impaired fat-digestion, and constipation constitute frequent complaints among the aged. Cholmodin, providing extract of aloes (¾ gr.) and deoxycholic acid (1½ gr.), corrects both conditions in a manner which approaches the physiologic.
Deoxycholic acid, a component of human bile, is an efficient choleretic and a potent emulsifier of fats. At the same time it stimulates motility of the small bowel.
Under its influence the contained aloes releases its emodin promptly, but at a slow, sustained rate, exerting a mild but continuous stimulant action on the colon. Thus the entire tract is activated, resulting in thorough evacuation, free from colicky or griping pains, and without undue water loss. Even prolonged use will not impair the physiologic mechanism of evacuation.

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An illustrated booklet covering the apparatus and equipment for various blood plasma procedures is now available. This booklet not only lists the basic apparatus but contains diagrams of donor, pooling and administration assemblies as well as full specifications on the apparatus. A convenient bibliography is included for those who wish to review the literature on the preparation of blood plasma. The equipping or remodeling of a blood bank and plasma processing laboratory is in reality a problem of plant engineering and requires a fairly wide range of apparatus and equipment. To better serve the laboratories installing a blood bank our technical staff has made a thorough study of the various processes now in use. These men will be glad to work with you in planning the new blood bank, in installing the equipment and in training your personnel.

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Continued from page 66

Otolaryngology as an integral part of the Scott and White Clinic, with Dr. B. Palmer Woodson as chief of the department. Dr. Woodson retains his position as Chief of the Department of Ophthalmology and Otolaryngology of the Gulf, Colorado and Santa Fe Hospital Association.

Dr. D. H. Denman, Lufkin, has been appointed part-time contract physician and surgeon for the Sub-German Prison Camp at Lufkin.

Dr. and Mrs. M. C. Overton, Lubbock, recently contributed $20,000 toward the construction of a Methodist Student Center in Lubbock.

Dr. Eli Powell, Cross Plains, has been named Health Officer of that city.

Dr. Chester N. Sidell, U. S. Public Health Service, has been placed in charge of Riverview Hospital, San Antonio, taking the place of Dr. Alonzo Brand, U. S. Public Health Service, who has been ordered to division headquarters in New Orleans for reassignment. Dr. Sidell is directing the venereal disease program in San Antonio.

Dr. R. H. Smith, Palo Pinto, has been re-elected President of the Nazareth Hospital Staff, Mineral Wells.

Dr. Emilio C. Carranza, Brownsville, has been named Health Officer of that city, succeeding Dr. T. P. Andrews.

Dr. W. B. Prothro, Director of the El Paso City-County Health Unit, was cited for outstanding work at the recent annual meeting of the American Public Health Association in New York.

Dr. W. B. Prothro and Miss Jewell Maxine Nash, both of El Paso, were married recently.

Dr. L. O. Dutton and Mrs. Evelyn Hadlock, both of El Paso, were married recently.

Texas Society of Pathologists at its recent semi-annual meeting installed Dr. Albert H. Braden, Houston, President; and elected Dr. Paul Brindley, Galveston, President-Elect; Dr. Mary Owen, Fort Worth, Vice-President; and Dr. John J. Andujar, Fort Worth, Secretary-Treasurer.

Dr. Lewis C. Robbins, Passed Assistant Surgeon, U. S. Public Health Service Reserve, formerly Health Officer of Wichita Falls, was recently cited for his successful conduct of a venereal disease control campaign instituted in Wichita Falls. He is now associated with the Public Health Department in San Antonio.

Dr. Joe D. Nichols, Atlanta, has been chosen President of the local Chamber of Commerce.

Dr. Arild E. Hansen, formerly Associate Professor of Pediatrics, University of Minnesota Medical School, Minneapolis, has been appointed Professor of Pediatrics and Chairman, Department of Pediatrics, University of Texas School of Medicine, Galveston, and Director, University of Texas Child Health Program under the auspices of the William Buchanan Foundation of Texarkana.

Deaths

Dr. Joseph B. Bailey, Clyde, aged 65, died recently of coronary thrombosis.

Dr. Walter S. Caldwell, Captain, Medical Corps, U. S. Army, Kilgore, aged 39, was killed in action in Italy last November.

Dr. Joseph Bennett Coopwood, Major, Medical Corps, U. S. Army, Lockhart, aged 37, was killed in action in Italy last November.

Dr. James Tayloe Gwathmey, Legion, aged 80, died recently of coronary heart disease and bronchial asthma.

Dr. Jesus Daniel Ibarra, San Antonio, aged 63, died recently of lobar pneumonia.

Dr. Wright B. Taylor, Weldon, aged 65, died recently.

Dr. Isham Sellers Moore, Major, Medical Corps, Army of the United States, Ozona, died several months ago while in the European theatre of war.

Dr. Bernice A. Zeigler, Shamrock, aged 70, died recently of lobar pneumonia.

VIRGINIA

Wise County Medical Society has elected Dr. Glen Foster, Stonega, President; Dr. F. D. Willey, Dunbar, Dr. George C. Snead, Derby, and Dr. E. P. Cox, Norton, Vice-Presidents; and Dr. W. B. Barton, Stonega, Secretary-Treasurer, re-elected.

Dr. Maxwell R. Berry, Jr., Assistant Professor of Medicine, Medical College of Virginia, Richmond, is entering private practice at Atlanta, Georgia.

Dr. G. B. Arnold, Superintendent, Lynchburg State Colony, has resigned and located in Lynchburg, practice limited to internal medicine, neurology and psychiatry.

Dr. Herman F. Oppleman, on account of physical disability, has retired from the Service. He has resumed general practice and is now associated with Dr. Richard S. Herring, Richmond.

Dr. Harvey B. Haag, Professor of Pharmacology, Medical College of Virginia, Richmond, has been appointed to the General Committee of Revision of the United States Pharmacopoeia.

Dr. J. R. Sanders, formerly of Madison Heights, is located in the Allied Arts Building, Lynchburg, engaged in general practice and obstetrics.

Dr. Hilmar R. Schmidt, Petersburg, has moved to Elkins, West Virginia, where he is roentgenologist at the Golden Clinic.

Dr. W. H. Turner, Jr., Round Hill, has moved to Oberlin, Ohio.

Children's Memorial Clinic, Richmond, recently elected Dr. Manfred Call, III, President. Dr. Howard R. Masters is Vice-President; and Dr. Harvie DeJ. Coghill, Secretary.

Neuropsychiatric Society of Virginia at its recent meeting elected Dr. O. B. Darden, Richmond, President; Dr. D. L. Harrell, Staunton, Vice-President; and Dr. J. Asa Shield, Richmond, Secretary, re-elected.

Medical College of Virginia, Richmond, has received grants in the amount of $1,000 made by Dr. C. C. Haskell for research in biochemistry, $4,000 made by the Office of Scientific Production and Research of the Federal Government for continuation of the research work in shock and burns, and $10,000 for the North Campus project.

Raiford Memorial Hospital, Franklin, will have a new three-story addition which has been made possible by a grant of $114,000 from the Federal Works Agency and $50,000 contributed locally. The staff of the hospital consists of Dr. R. L. Raiford, who founded the hospital in 1939; Dr. Morgan B. Raiford, Dr. R. L. Raiford, Dr. Kurt Hirsch and Dr. Joseph D. Hough.

Dr. Joseph M. Dixon, Major, an alumnus of the Medical College of Virginia, Richmond, has been appointed Professor of Military Science and Tactics, relieving Dr. Paul L. Freeman, Colonel, who is being retired as commandant of the 3313th Unit of the A S T program under the Army at the College.

Dr. Harry W. Hollingsworth, Leona Mines, has taken over the former office of Dr. John R. Saunders, Madison Heights, and is engaged in general practice of medicine there and in Amherst County. He resides in Lynchburg.

Dr. S. H. Macht, Crewe, who has been taking special work in radiology at the Jefferson Hospital, Philadelphia, has been appointed an Assistant in that Department.

Continued on page 70

LaMOTTE BLOOD CHEMISTRY SERVICE

New LaMotte Phenolsulfonphthalein Outfit

(ROULETTE TYPE)

This new LaMotte outfit employs a new principle of comparison developed in the LaMotte Research Laboratory to give greater accuracy in the phenolsulfonphthalein test. The procedure used with this outfit has proved effective in removing the source of error attributed to the presence of turbidity and color in the urine specimen. Price, complete with daylight reading arrangement, plug-in attachment, and snap switch—$50.00 F. O. B. Towson.

This service includes a series of similar outfits for conducting the following accurate tests: Blood Sugar, Blood Urea, Sulfathiazole, Sulfapyridine, Sulfanilamide, Sulfadiazine and Sulfaguanidine in Blood and Urine. Icterus Index, Urine pH, Blood pH, Gastric Acidity, Calcium - Phosphorus, Blood Bromides, Urinalysis.

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GASTRON is an original extract of the organic and inorganic constituents of the entire mucosa of the hog-stomach, including the pylorus. The acidified and aromatized extract is incorporated in an aqueous-glycerin-propylene glycol menstruum which preserves the enzymatic activity. The preparation contains no alcohol. It is accurately standardized by assay.

GASTRON is indicated as replacement therapy in atrophic gastritis, and as an aid in the treatment of chronic gastritis. It is of value as adjunctive treatment in the anemias, and in certain gastric deficiencies associated with convalescence and old age. It is worthy of trial in the nausea and vomiting of pregnancy.

GASTRON with IRON also is available for prescription use

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IN PERNICIOUS ANEMIA

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In the preparation of this potent liver extract, the process has been so standardized that the extract is duplicated with reasonable consistency, both in the amount of liver represented per c. c. and in the effective substance active in producing a prompt and consistent reticulocyte response in patients with pernicious anemia. Retains the Cohn-Minot and Whipple fractions as well as over 3 mg. of riboflavin per fluid ounce. Supplied in 8 oz. bottles.

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Continued from page 68

DEATHS

Dr. Leigh Buchner, Roanoke, aged 82, died recently.

Dr. Harry Dresser B. Howe, Hampton, aged 71, died recently of cerebral hemorrhage and hypertension.

Dr. Norborne T. Greer, Rocky Mount, aged 75, died January 25.

Dr. Dennie Marvin Thomasson, Lynchburg, aged 65, died February 18.

Dr. Arthur Grayson Vaden, Temperanceville, aged 70, died February 1.

WEST VIRGINIA

West Virginia State Medical Association will hold its next annual meeting at the Windsor Hotel, Wheeling, May 15-16.

Classified Advertisements

LANTERN SLIDES—Doctors, Teachers, Illustrators: use lantern slides at your next meeting. It is impossible to discuss a topic that includes illustrations to a large audience in a short time and discuss it right. Any material such as charts, drawings, photographs, x-rays, etc. can be made into your favorite size slide. More and more Hospitals and Medical Schools are employing their use today for better teaching. Mounted in glass, clear and bright as the original itself. Write Tommy S. Gibson, Photographer, 2218 State Street, Nashville, Tennessee.

WANTED—Two physicians, Graduate Class A medical school, for Milledgeville State Hospital, Milledgeville, Georgia. Address inquiries to Dr. Y. H. Yarbrough, Superintendent.

EDITING—Preparation of papers and reports, indexing, abstracting, bibliographies and similar services to physicians. Address inquiries to Elizabeth M. McFetridge, M.A., 4810 St. Charles Avenue, New Orleans 15, Louisiana.

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FOR SALE—Excellent general practice. Small West Virginia town on B. & O. Railroad and U. S. Highway No. 50. Small hospital available. $13,000 gross income in 1943. Reason: Specializing because of health. H.G.F., care Southern Medical Journal.

Boone County Medical Society has elected Dr. R. L. Hunter, Whitesville, President; Dr. D. F. Pauley, Jeffery, Vice-President; and Dr. J. Paul Aliff, Nellis, Secretary-Treasurer.

Fayette County Medical Society has elected Dr. Claude Frazier, Winona, President; Dr. J. B. Thompson, Oak Hill, Vice-President; and Dr. Eugene S. Carter, Jr., Secretary-Treasurer.

West Virginia State Health Conference will be held at the Daniel Boone Hotel, Charleston, May 1-2.

Dr. Robert D. Wright, former Venereal Disease Consultant attached to the State Board of Health, has been assigned as Medical Officer in Charge of the new Kanawha Valley Medical Center at South Charleston.

The following were accepted into fellowship in the American College of Surgeons in 1943: Dr. Bert Bradford, Jr., Dr. Francis A. Clark, Dr. John B. Haley, Dr. George Miyakawa and Dr. Harwood H. Ritter, all of Charleston; Dr. William T. Gocke, Dr. Herbert H. Haynes and Dr. Joseph F. Lembright, all of Clarksburg; Dr. Joseph S. Maxwell and Dr. William A. Welton, both of Fairmont; Dr. Matthew M. Ralston, Beckley; Dr. Henry J. Wiser, Bluefield; and Dr. Donald W. Mitchell, Ronceverte.

Dr. Reginald Campbell Edson, former Assistant Superintendent, Hopemont Sanitarium, is Assistant Director of Tuberculosis Control for the State of Connecticut.

Dr. Edda Von Bose, formerly of Alderson, who has recently been on the Women's Hospital Staff, Philadelphia, has located for the practice of medicine at San Antonio, Texas.

Dr. Edwin C. Lane, Mallory, has relocated for practice at Ypsilanti, Michigan.

Dr. C. E. Perry has moved from Sobato to Sprigg.

Dr. John Q. Godbey has moved from Chesapeake to Wevaco.

Dr. B. D. Smith has moved from Omar to Amherstdale.

Dr. W. P. Hamilton has moved from Logan to Chapmanville but will continue to serve as part-time Health Officer for Logan County.

Dr. Richard B. Engle, Slab Fork, has moved to Beckley, where he is attached to the Raleigh General Hospital Staff.

Dr. Walter E. Vest, President, Public Health Council, and Dr. Edward J. Van Liere, Dean, School of Medicine, West Virginia University, Morgantown, attended the Fortieth Annual Congress on Medical Education and Licensure, February 14-15, at Chicago.

Dr. Ward L. Oliver, Cobleskill, New York, has been appointed Health Director, District No. 3, with headquarters at Point Pleasant, succeeding Dr. Blinn A. Buell, who has been transferred to Portsmouth. District 3 is composed of Jackson, Mason, Putnam and Roane Counties.

Dr. John W. Gilmore, Wheeling, has been named Director of the City-County Health Department, succeeding Dr. Andrew J. Niehaus, resigned.

Dr. Paul R. Gerhardt, Director, Bureau of Medical Services in the Department of Public Assistance at Charleston, has been appointed Director of the new Division of Cancer Control.

Dr. Harold B. Young, St. Marys, has been appointed part-time Health Officer of Pleasants County.

DEATHS

Dr. Jay Randolph Crawley, Anjean, aged 63, died February 2 of heart disease.

Dr. Charles Benton Marshall, Nitro, aged 51, died February 5 of cerebral hemorrhage.

Dr. James Esmond Hereford, Morgantown, aged 60, died recently of acute coronary heart disease.

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**MYOCARDIAL STIMULANT AND POWERFUL DIURETIC:
EFFECTIVE IN BRONCHIAL ASTHMA, PAROXYSMAL DYSPNEA AND CHEYNE-STOKES RESPIRATION.**

Numerous reports in the literature comment on Prompt Relief, Favorable Action, and Dramatic Improvement in these conditions.

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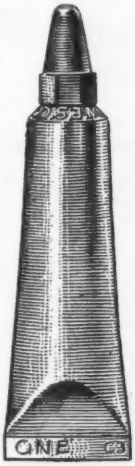

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DEXTRI-MALTOSE is no ordinary carbohydrate. Step by step, its manufacture is surrounded with every care and precaution, evolved through long years of experience and research.

Unseen by physician and patient are numerous safety factors, the practical effect of which nevertheless is present in every package of Dextri-Maltose. To name a few of these:

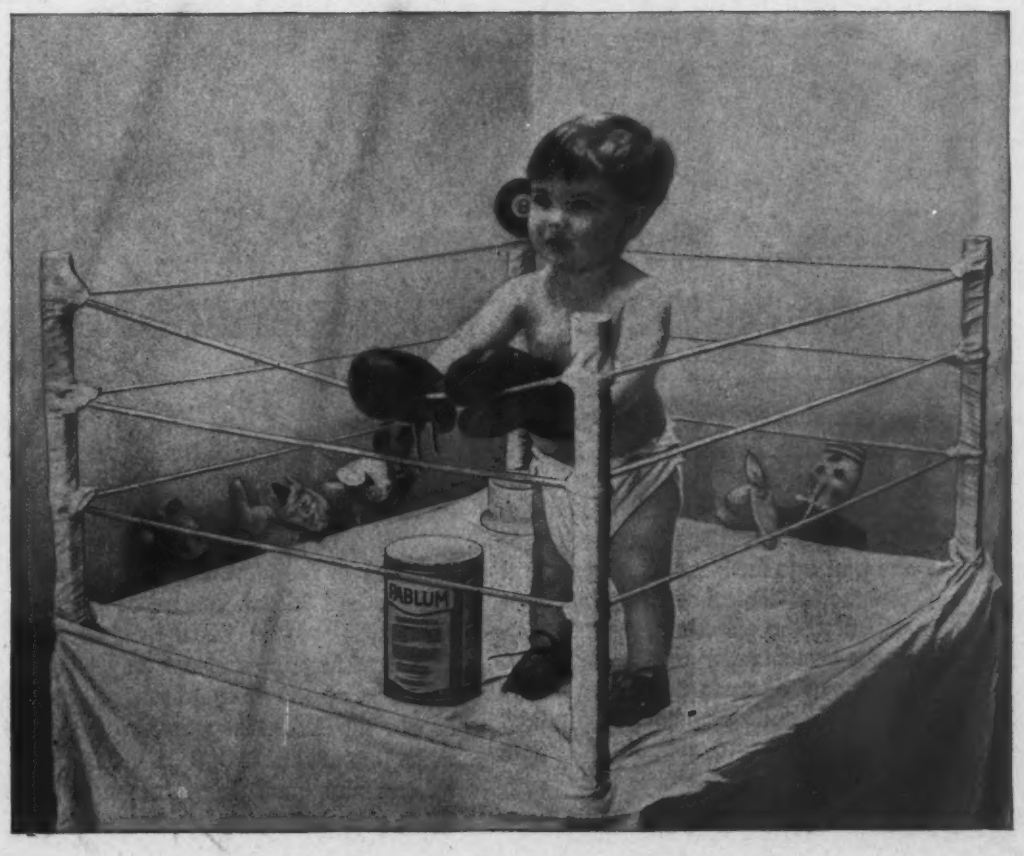
1. Dextri-Maltose is sampled for bacteriological testing before drying.
2. Steam at 20 pounds pressure sterilizes Dextri-Maltose filter presses which remove proteins, fat, and indigestible residue.
3. Blood agar tests are made to insure absence of hemolytic cocci.
4. Dextri-Maltose containers are paper-wrapped to prevent the cans from accumulating dust.
5. Bacteriological tests are made in a steam-washed plating room, the air of which is filtered.
6. Dextri-Maltose containers are automatically filled and closed without human handling of the product.
7. The direct microscopic test which Dextri-Maltose receives is but one kind of 6 microbiological tests which it must routinely meet.
8. The interiors of the large converters in which Dextri-Maltose is processed are thoroughly scrubbed prior to steam sterilization.
9. Steaming under 20 pounds pressure sterilizes the converters for processing Dextri-Maltose.
10. After being packaged, Dextri-Maltose is held in storage and released only after final approval from the bacteriological checking laboratory.
11. Portable equipment used in manufacturing Dextri-Maltose is sterilized in autoclaves at 20 pounds live steam pressure for 20 minutes.
12. Dextri-Maltose is tested routinely to check the keeping quality of prepared feedings held in refrigeration for 24 hours.

Among other important measures in the sanitary control of Dextri-Maltose is the vaccination of all employees for smallpox and typhoid. The entire personnel also receive Mantoux tests and x-rays of the lungs. Every new employee must pass complete medical examinations.

It is, therefore, no mere coincidence that Dextri-Maltose enjoys greater pediatric acceptance today than ever before. By constant research and everlasting watchfulness, we try to keep pace with pediatric progress, and we put forth every human effort to merit the continued respect and confidence of the medical profession.

The True Measure of Economy Is Value

MEAD JOHNSON & CO., Evansville, Ind., U.S.A.


PABLUM

COMBINED IMMUNIZATION

THE best age for immunizing children against whooping cough is also the best age for immunization against diphtheria. Clinical evidence has demonstrated the effectiveness of simultaneous immunization against these two childhood diseases and opened the way for the development of a potent antigenic mixture suitable for general use.

Climaxing this research, Parke-Davis presents *Diphtheria Toxoid - Pertussis Vaccine, Mixed (Sauer),* prepared according to the specifications of Dr. L. Sauer, of the Northwestern University Medical School. The new product is administered in three treatments, four weeks apart, and not only saves the time of the busy physician, but spares the infant unnecessary injections. It is available in 6 cc. vials containing one immunizing course, and 24 cc. vials containing four immunizing courses.

DIPHTHERIA TOXOID-PERTUSSIS VACCINE, MIXED (SAUER)

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